ENGINEERING NEWS-RECORD

Steel forms shape tapered piers *p.34*

STEVENS RICE GS N I
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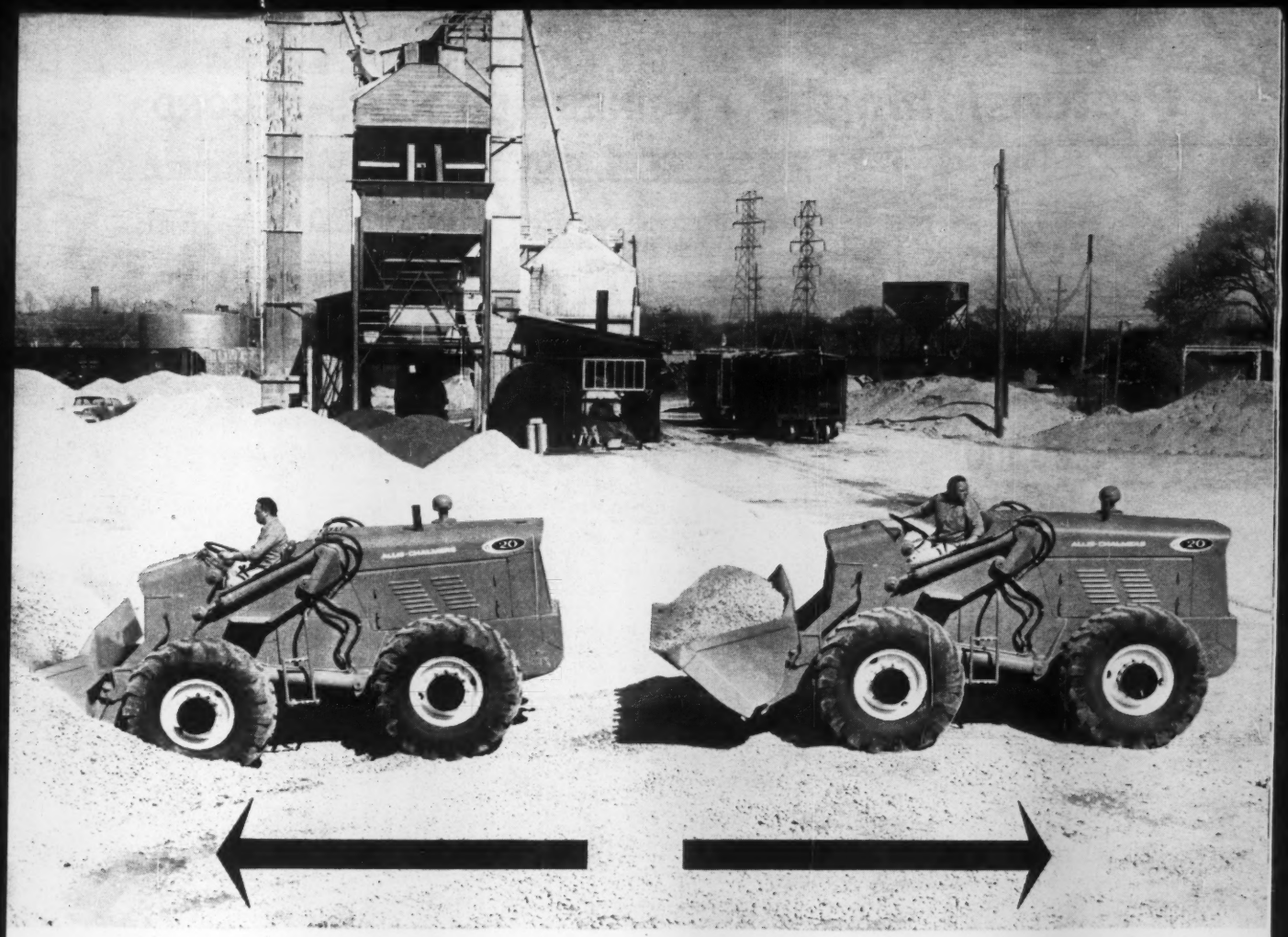

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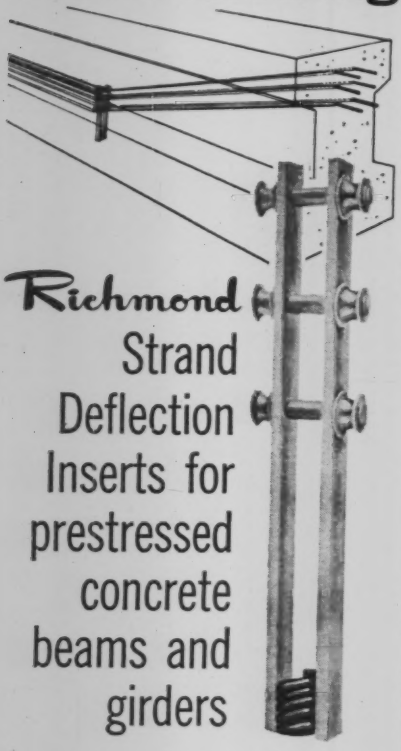

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Reader Comment

Murky Albuquerque?

SIR—I object very strenuously to the author's note on my article on bridge plans (ENR Apr. 13, p. 37) making me a resident of oven-hot, dust-shrouded Albuquerque, instead of high, clear, cool Santa Fe. Selection of the latter city as home is just as much the result of "clear thinking" as is a good bridge drawing.

Historically the ancient Indian tribes avoided the Albuquerque area by more than 20 miles as attested by archeological studies. As a matter of fact, the heaven of the Sandia Indians, bearing a striking likeness to a cumulus cloud, still hovers daily over the Sandia peaks, yet avoids the area above Albuquerque like a pestilence.

When in the year 1610 the Conquistadores came riding up along the Rio Grande, they galloped right across the site of present day Albuquerque and did not draw rein until they reached a lofty Indian pueblo at the foot of the Sangre de Cristo mountains where a snow fed brook babbled across the plaza. So delighted were the Spainards that they named this pleasant place "La Villa Real de la Santa Fe de San Francisco de Asis." It is just as pleasant today with the addition of waterworks, sewage treatment, natural gas and some paving.

FRED D. HARTFORD
Santa Fe, New Mexico

More on Aswan

SIR—I have read the article on the Aswan High Dam (ENR Feb. 23, p. 32) with great interest and found it quite informative and adequate. I would only call attention to the fact that an upstream clay-concrete blanket is still included in the design as shown on the cross section on p. 36. Thus, no elimination of the upstream blanket is intended and there will continue to be two lines of defense against leakage—the blanket and the vertical cutoff.

It is also fitting to note that in the original design, made by the group of international consultants, the width, up and downstream, was fixed at 1257.5 meters. After this design was submitted a grout curtain in river sediments to a depth of 150 meters was successfully installed under the Mission Dam in

(*Reader Comment continued p. 10*)

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St.,

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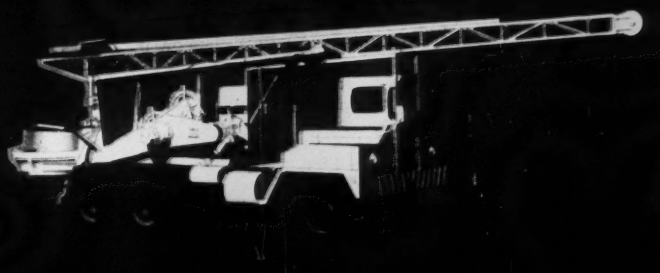

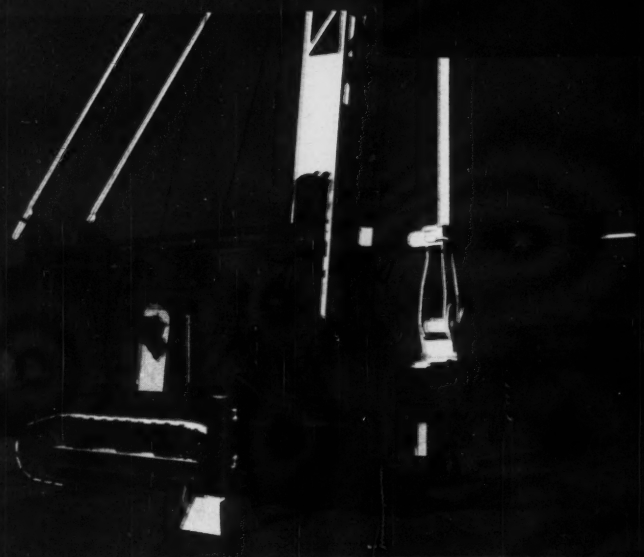

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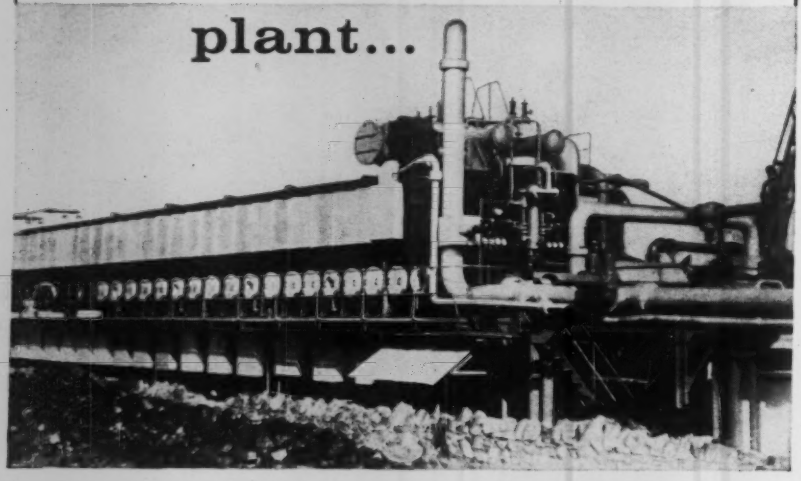

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DISTILLED FROM THE SEA

. . . Reader Comment

Canada. Equally successful was the grout curtain made across the river sediments beneath the Serre Poncon Dam in France, as the article stated. Encouraged by the efficient performance of these grout curtains, the original designers recommended a substantial shortening of the width of the base to 1007.5 meters, as shown on the drawing, and agreed to move the axis of the dam upstream toward the entrance of the diversion channel to gain a reduction in the length of this channel.

HASSAN ZAKY
President,
Sadd-El-Aali Executive Organisation
Cairo, Egypt.

Still on the Job

In crediting Ned L. Ashton of Iowa City as the consulting structural engineer for the radio telescope at Green Bank, W. Va., ENR used the past tense (ENR Mar. 23, p. 44). This apparently led some readers to believe that he no longer is connected with the project. On the contrary, Mr. Ashton not only was structural designer but he also is a consultant to Associated Universities on the construction.

Author's Name Omitted

We inadvertently dropped the by-line for "Three Ways to Store A-Wastes," (ENR Apr. 13, p. 93). The story was written by W. R. Towle, Knolls Atomic Power Laboratory, General Electric Co.

For Your Calendar . . .

Construction Specifications Institute, annual convention, May 22-24, Commodore Hotel, New York City. Write: CSI, 632 DuPont Circle Building, Washington 6, D. C.

American Gas Association, gas transmission conference, May 25-26, Brown Palace and Cosmopolitan Hotels, Denver, Colo. Write: AGA, 420 Lexington Ave., New York 17, N. Y.

National Congress on Environmental Health, June 6-8, University of Michigan School of Public Health, Ann Arbor, Mich. Write: Wm. Bender, Jr., 3564 Administration Building, University of Michigan, Ann Arbor, Mich.

American Society of Mechanical Engineers, annual summer meeting, June 11-15, Statler Hilton Hotel, Los Angeles, Calif. Write: ASME Meetings Department, 29 W. 39th St., New York 18, N. Y.

American Shore and Beach Preservation Association, annual meeting, June 14-16, Sea Scape Motel, Atlantic City, N. J. Write: Walter C. Hopkins, P. O. Box 717, Baltimore 3, Md.

American Institute of Electrical Engineers, summer general meeting, June 18-23, Cornell University, Ithaca, N. Y. Write: Raymond C. Mayer & Associates, 51 E. 42nd St., New York 17, N. Y.

American Society for Testing Materials, annual meeting, June 25-30, Chalfonte-Haddon Hall, Atlantic City, N. J. Write: ASTM, 1916 Race St., Philadelphia 3, Pa.

National Society of Professional Engineers, annual meeting, July 4-7, Olympic Hotel, Seattle, Wash. Write: Kenneth E. Trombley, NSPE, 2029 "K" St. N. W., Washington 6, D. C.

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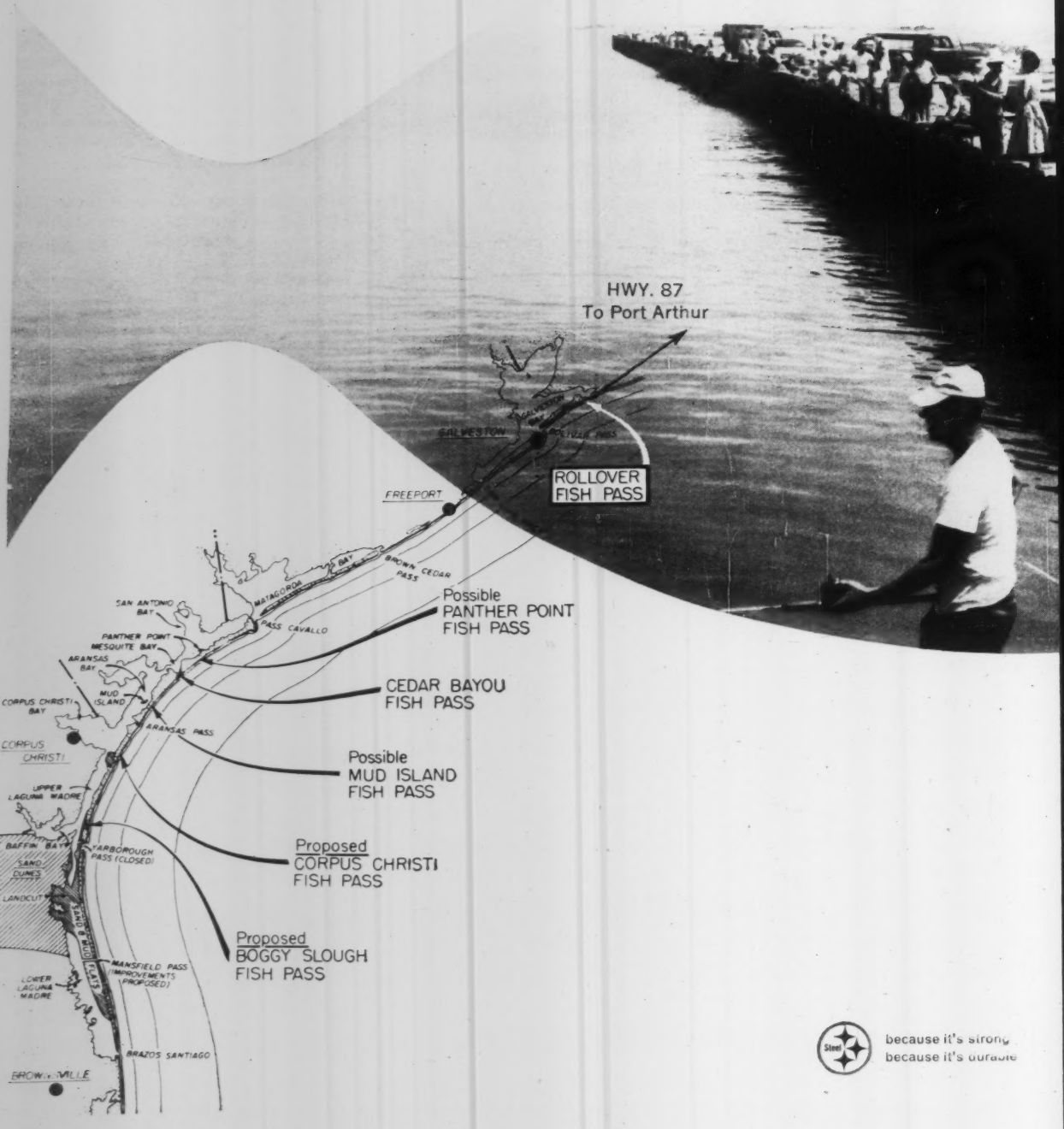

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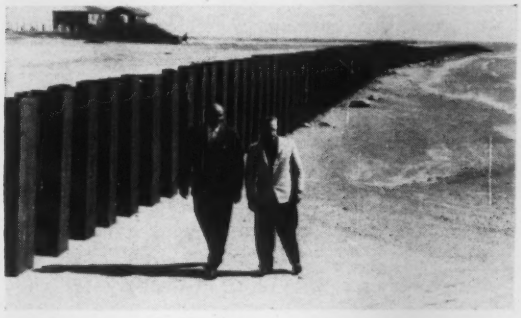
at Rollover Fish Pass

● Rollover Fish Pass is a narrow, man-made channel that runs through a barrier island off the coast at Galveston, Texas. It was dug several years ago by the Texas Game and Fish Commission to connect the Eastern Arm of Galveston Bay with the Gulf of Mexico as part of a long-range program to improve commercial and sport fishing in the bays of the Texas Coast. Artificial waterways like Rollover improve the salinity balance of the bays and open new spawning grounds. ● At first, Rollover Pass caused trouble. Powerful tidal currents eroded the sides and widened the channel causing damage to adjacent property and endangering bridges on State Highway 87. Remedial action taken consisted of driving steel sheet piling along the sides of the Pass to stop erosion. Two steel sheet pile sills were also driven across the pass to keep the channel from scouring. Over 1500 tons of USS steel sheet piling were used for the job. ● Joe Marks, Chief Engineer for the Texas Game and Fish Commission, said, "United States Steel sheet piling was selected because of its strength and economy. I fully expect this steel sheet piling to have a long and useful life." ● Today, Rollover Fish Pass is one of the most popular fishing spots in the area. As many as 5000 people have fished here in one day. And the Pass has attracted new businesses, too—restaurants and motels have sprung up nearby. Mr. Marks said, "The operation of the pass is highly successful and fishing results have been excellent." The success of Rollover Pass has prompted the Commission to move ahead on plans to excavate additional inlets through the barrier islands along the Texas Coast. ● If you need steel piling—steel sheet piling, pipe piles or H-Piles, call the nearest U. S. Steel Office, or contact United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.



Fred T. Hankey, Jr. and Joe Marks of the Texas Game and Fish Commission inspect steel piling installation at Rollover Pass.

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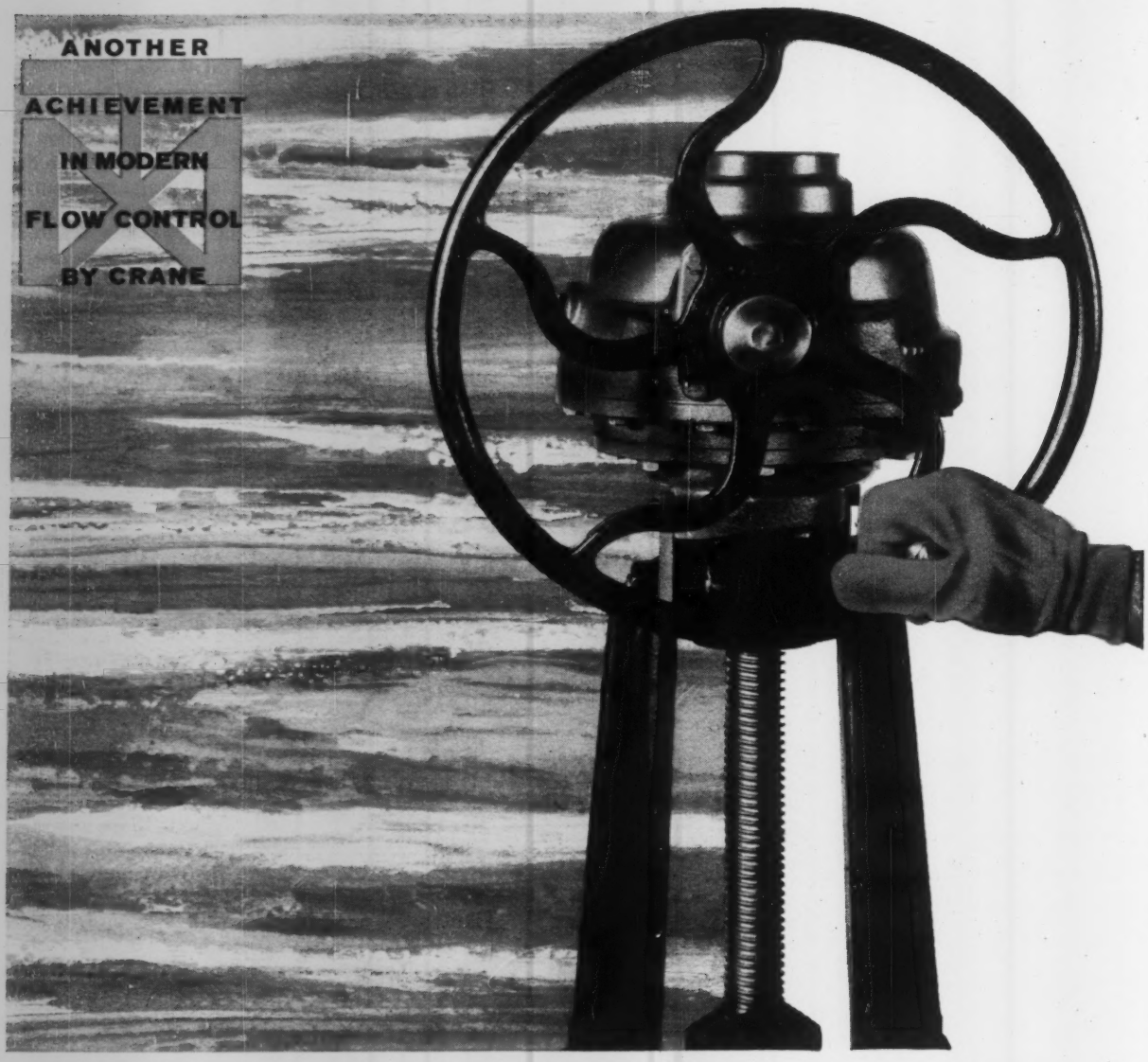
USS TRADEMARK

United States Steel



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THE CONSTRUCTION WEEK

BAD OIL STOPS JOB—Contaminated diesel oil last week disabled 53 pieces of construction equipment and forced McDougall Construction Co. of Portland, Ore., to shut down a $2-million embankment job temporarily. Corrosion knocked out bulldozers, dump trucks, scrapers and earth movers. Apparent cause: ammonium sulfate liquid fertilizer left over in a tank truck from a previous delivery.

STEEL PRICES HAVE TO GO UP—So says Bethlehem Steel Corp. president E. F. Martin. He told stockholders prices had not been raised in three or four years, while wages will be boosted another 13 cents an hour in October. But the steel industry will have to get "a little more business," before it can raise prices, he added.

GLUED BRIDGES?—The day when epoxies may be used to tie structural bridge and building members together is coming closer. Last week, the University of Arizona Engineering Experiment Station demonstrated that an epoxy can be used to bond concrete to steel in a composite bridge beam.

TIDAL POWER PLAN GOES UNDER—The U. S.-Canada International Joint Commission has rejected the proposed $687-million Passamaquoddy tidal power project as economically unfeasible. The development would have harnessed the great tidal fluctuations in Passamaquoddy Bay, a Bay of Fundy inlet between Maine and New Brunswick.

NEW CONCRETE CODE—Prestressed concrete and high-strength reinforcing will be allowed in New York City if a new code section now before the City Council is approved. The new concrete code would also update and consolidate in one section concrete regulations that for 25 years have been scattered through the entire building code.

DON'T BANK ON IT—The House Ways and Means Committee again approved a bill that would allow the professions and other self-employed to defer income taxes on up to $2,500 annually if put into a retirement fund. But chances of passage are slim.

STUDIES ANYONE?—Local and state governments that want the Corps of Engineers to make a flood-plain study can apply now with District Engineers. Congress last year authorized $500,000 for the purpose, and President Kennedy urged full speed in his natural resources message. Studies begin after July 1.

RAPID TRANSIT FOR FISH—Public and Private agencies will spend $177 million for fishways at dams on the Columbia River system. The tab for fishways completed or under way totals $155.8 million.

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WASHINGTON OBSERVER

- **Money for depressed areas coming**
- **Eliminate discrimination voluntarily, or else**
- **House starts work on airport aid**

● **Federal funds should start flowing into depressed areas in two or three months** now that President Kennedy has signed the $451-million depressed areas bill into law. The government will put up as much as 65% of the cost of new plants and industrial sites, with the rest of the money coming from local sources.

The Commerce Department will handle the new program through its just-created Area Redevelopment Administration. Head of the agency is 44-year-old William L. Batt Jr., former secretary of labor in Pennsylvania and vice chairman of that state's Industrial Development Authority.

Meanwhile, AFL-CIO President George Meany wants the government to put $3 billion into a construction program to relieve unemployment. His proposal calls for federal grants, mostly in depressed areas, to accelerate construction of both private and public facilities. There is virtually no chance, however, that the Administration will support the plan. It is not even backing a $1-billion program sponsored by two Democratic congressmen (ENR Apr. 27, p. 19).

—

● **Vice President Lyndon B. Johnson is trying to "persuade" union leaders and contractors to eliminate discrimination on government projects.** He and other members of the committee's anti-discrimination committee began a series of face-to-face meetings with employers this week to explain that the Administration means business in its drive.

The committee says the Administration is willing to go slow in the program—provided unions and contractors show good faith in attempting to end bias in employment. If not, the Administration will drop its persuasion technique for more forceful measures.

—

● **First round of congressional hearings on the Administration's aid-to-airports bill is due next week.** The House aviation subcommittee gets first crack at the $375-million program; Senate hearings are not yet scheduled. The program would boost the present $63-million-a-year spending to $75 million annually.

The Federal Aviation Agency says 465 new airports are needed and 2,834 existing facilities should be improved if civil aviation needs five years hence are to be met. The program, a projection of needs and not a formal request to Congress, would cost $1.1 billion.

—

● **The House subcommittee on roads almost certainly will receive** permission to inspect income tax returns in its study of highway irregularities. The group, headed by Rep. John A. Blatnik (D., Minn.), had such authority last year and is asking President Kennedy to renew it by Executive Order.

The subcommittee will resume hearings later this month. Groundwork already has been done by the staff on Interstate highway problems in Massachusetts, West Virginia and New Mexico. The group will probably take up conditions in New Mexico first.

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Congressmen Mills (Ways and Means) and . . .

Fallon (Public Works) polish off . . .

A Highway Bill the House Will Pass

Although a final decision is weeks away, it's now a safe bet that Congress will permit no retrenchment in the massive federal-aid highway program.

This week the House was handed a bill to raise the money needed and to authorize its spending. Rep. Wilbur D. Mills (D., Ark.) had led the House Ways and Means Committee to a compromise on finance; Rep. George H. Fallon (D., Md.) reported the needed authorization out of the Public Works Committee's Subcommittee on Roads.

Both the House of Representatives and the Senate are expected to accept the compromise tax formula, worked out to raise an extra $9.7 billion that would rescue the program from its money crisis.

This additional revenue would save the 41,000-mile Interstate System from either a stretchout or cutback and permit its completion by 1972 as originally planned. It also would make possible a gradual increase in authorizations for the ABC system of primary, secondary and urban roads from the present level of $925 million annually to $1 billion in 1968.

President Kennedy is generally pleased with the committee's action. The tax formula is not completely to his liking, but it will provide virtually all the new revenue he sought to keep the highway program on schedule. He will not endanger this end result by forcing a fight in Congress over how the money is to be raised.

Under the Ways and Means Committee plan, the additional $900 million needed on an annual basis would come from these sources:

- Continuing the federal gasoline tax at four cents a gallon through September 1972 rather than letting it drop to three cents as scheduled July 1. This would provide most of the new revenue—$600 million.
- Increasing taxes on heavy trucks, tires, tubes and tread rubber by an estimated $150 million.
- Tapping the general treasury for the remaining $150 million and channeling this to the Highway Trust Fund.

President Kennedy had wanted to put the whole burden of the new financing on motorists and truckers, thus avoiding any diversion that would leave a deficit in the general treasury. He would have required motorists to make the same contribution as the committee proposes but would have taken twice the amount from truckers. He cited the cost allocation study by the Bureau of Public Roads showing that big trucks are not paying their fair share of the highway bill.

The committee listened sympathetically to the pleas of truckers that they could not pay tax increases of the magnitude proposed by the President and remain an effective, competitive mode of transportation. They also challenged the accuracy of the BPR study.

Rather than hiking the tax on diesel fuel to seven cents a gallon, the committee voted to keep it at its present four-cent level. It increased to $3 rather than $5 the present annual tax of $1.50 per 1,000 lb on trucks weighing more than 26,000 lb. And it increased from three to five cents the tax on tread rubber.

The committee agreed with the President on only one increase that would fall on truckers. It consented to raise to 10 cents a pound the present eight-cent tax on tires and nine-cent tax on inner tubes.

(*Please turn the page*)

The money to be diverted from the Treasury represents the portion of the manufacturer's excise tax on new trucks, trailers and buses not now flowing into the Highway Fund. At present, only half this tax goes toward highway financing.

In working out its compromise, the committee achieved two results that will ease the highway bill's passage through Congress considerably.

• It drastically lessened the opposition of the truckers, who, through the American Trucking Association, maintain one of the more powerful lobbying forces in Washington.

• It picked up the support of many in Congress who feel that taxes on truckers should not be hiked sharply as long as half the excise tax they pay on new vehicles is still going into the general fund for non-highway use.

Significantly, the trucking association has issued no formal reaction—either pro or con—to the committee's action. Previously, it had gone on record as favoring a stretchout in the highway program in preference to the Kennedy tax program.

Truckers privately heaved a great sigh of relief over the committee formula. They may complain that even the compromise plan will hit them hard financially, but from a realistic standpoint they realize they face a tax increase of some sort.

The American Automobile Association and tire dealers are loudly complaining about the compromise plan, however. AAA says that "by continuing the gasoline tax at four cents, Congress would break its promise to the people that the tax would expire June 30." It also charges that the committee bill "fails by a wide margin to assess against heavy trucks their fair share of the total cost."

But despite these objections, the compromise financing plan is expected to clear the House easily and soon. The Rules Committee probably will send it to the House floor under a procedure barring amendments. This would put the measure on a "take-it-or-leave-it" basis, and there is little doubt that the House will take it.

Guiding the bill through the House will be Representative Fallon. Although the Ways and Means group, which has jurisdiction over tax matters, passes on methods of financing the road program, Mr. Fallon's public roads subcommittee fixes the rate at which this is to be spent and has final say on the highway legislation.

The Pubic Works Committee last week authorized spending an additional $11.6 billion on the Interstate system. This would raise total Interstate authorizations to $37 billion, which is the estimated cost of the Federal share of the program.

The revised schedule would not affect the $2.2 billion alloted for the fiscal year starting July 1. The first change would come July 1, 1962, when the authorization would go up from $2.2 billion to $2.4 billion. After that authorizations would rise from $2.2 to $2.6 billion in 1963; from $2.2 to $2.7 billion in 1964; from $2.2 to $2.8 billion in 1965; from $2.2 to $2.9 billion in 1967; from $1.5 to $3 billion in 1968; and from $1.025 to $3 billion in 1969. In addition, $3 billion would be authorized for 1970 and $2.88 billion for 1971. No authorization is now provided for these years.

The $9.7 billion in new revenue the legislation provides would increase the amount of total money flowing into the Trust Fund through 1972 from $42.8 billion to $52.5 billion. This would finance not only the $37-billion Interstate program but the federal share of the cost of the ABC highway program.

The new bill contains no long-range authorizations for ABC roads. The Public Works Committee makes these every two years, with the next one due in 1962. But the new taxes would provide enough revenue to increase the present $925-million annual authorization to $950 million for 1964 and 1965, to $975 million for 1966 and 1967 and to $1 billion for 1968 through 1972.

The Senate public works and finance committees will not begin considering the highway legislation until it clears the House. Their hearings probably will begin within two weeks.

Sen. Harry F. Byrd, chairman of the finance group, and conservative Republicans on the group, may balk at the revenue diversion feature of the House bill. As fiscal conservatives, they object to moves that add to the deficit in the over-all federal budget. And switching $150 million in truck excise taxes from the Treasury to the Highway Fund would do just that.

The committee majority, however, is expected to stick pretty much to the House plan. The Senate almost certainly will go along.

Two proposals by the President were dropped from the House bill altogether and probably will remain out. In order to avoid stirring up further controversies that would endanger passage of the main legislation, the two House committees rejected two Kennedy proposals:

One would extend for four more years the billboard control feature of existing highway law and increase the federal bonus to states agreeing to such control. The present billboard control bonus provision expires June 30; only one state (Maryland) has taken advantage of it.

The other would transfer the financing of forest and public land highways, now charged against the General Treasury Fund, to the Highway Trust Fund.

Architects

For last week's convention in Philadelphia, the American Institute of Architects chose the grand theme, "Redesigning Urban America." The internationally famous quartet of featured speakers did this and more—they critically redesigned much of urban Europe and part of South America, too.

Robert C. Weaver, Administrator of the Housing and Home Finance Agency, thanked the AIA for its support of President Kennedy's proposal to create a Department of Urban Affairs and asked the architects' support of other Administration proposals in urban renewal. Sir William Holford, president of the Royal Institute of British Architects, appeared as an international champion of the pedestrian. Prof. Bruno Zevi of the University of Rome described the chief problem of rebuilding the cities of the West as "no longer a matter of money, but of ideas." And philospher-critic Lewis Mumford pleaded with the architects "to forget the damned motor cars, design the cities for friends and lovers."

• Professor Zevi, whose powerful bass voice and arm-waving enthusiasm triumphed over some difficulties with the English language, struck the most harmonious chord of the convention. He exhorted the architects to assume leadership in the design and rebuilding of cities. Expand your professional interests; think less about stylistic details and more about the city-making process, urged Professor Zevi. There were no audible dissenters in the packed spaces of the Bellevue Stratford Ball Room.

Citing Philadelphia as one of the world's centers of urban design, Professor Zevi discussed the international importance of American city planning and construction. He advocated a policy of architectural intervention on an international scale in city planning. This movement would be "anti-bureaucratic"; architects would ignore national boundaries in making criticism and constructive proposals.

Professor Zevi condemned excessive demolition in many U. S. urban renewal projects. He urged more restraint with the headache ball and the bulldozer and more architectural imagination to integrate the old with the new.

Architects will either "promote or become the passive reflection of a disintegrated city life" in which "suburban sprawl nullifies the differences between town and country," Professor Zevi said.

• Mr. Mumford, author of the recently published book, "The City in History", predictably had little good to say about the typical urban renewal project. "Too often, under the illusion

Do the Cities Over Again—in Words

that they have assisted in an urban birth, the planners and architects have actually performed a hysterectomy." He cited the Pittsburgh Golden Triangle (ENR Nov. 19, 1959, p. 55) and New York's Lincoln Center (ENR Oct. 15, 1959, p. 27) as examples of "culturally sterile projects." They are "too sudden, too vast," said Mr. Mumford.

Mr. Mumford advocates planning on the "human scale" to restore the social contacts of the Parisian cafes and Manhattan's off-Broadway theatres and expresso bars.

The greatest architects of the age and the architectural schools felt the sting of Mr. Mumford's criticism. According to Mr. Mumford, their emphasis on the non-human, monumental scale springs from the desire to exploit the possibilities of modern technology. As a consequence, "The city has been disappearing before our eyes, sinking under a tidal wave of motor cars and parking lots," he said.

• **Sir William Holford established himself as an optimistic disciple of Mr. Mumford. According to Sir William, the downtown traffic congestion that plagues American and European cities is not primarily a problem in traffic engineering; it is a problem in town planning.** "Yet in many countries engineers and administrators are still wearing blinkers, and the architects are only now beginning to pull them off."

He discussed London's pedestrian reservations, which isolate pedestrians horizontally in traffic-free areas and vertically in upper-level walkways. The London County Council approves building permits for reconstruction of the bombed-out Barbican area only when the architect provides pedestrian entrances and shop windows at the upper level. Sir William's architectural firm has redesigned the St. Paul vicinity and Piccadilly Circus (ENR May 26, 1960, p. 17) for the pedestrians.

In praising Brasilia, Sir William disagreed with Mr. Mumford. Sir William called Brasilia "a city that has anticipated traffic congestion, instead of waiting for it to become a problem." The new Brazilian capital demonstrates "the control that architectural imagination can establish over an environment."

• **Mr. Weaver underscored the magnitude of the nation's urban problems with some statistics from the Census Bureau.** About 63% of the 180-million U. S. population lives in 212 metropolitan areas. By the year 2000, ten U. S. metropolises will have populations ranging from 5 million to 23 million, according to one planner's prediction.

Discussing the federal government's expanded role in rebuilding our cities, Mr. Weaver noted a $200-million backlog of applications for federal grants and estimated an annual demand of $600 million in federal funds to support the nation's urban renewal programs. The President's request for $2.5 billion authorized for the next four years (ENR Mar. 16, p. 26) would assure continuity in urban renewal, according to Mr. Weaver.

Mr. Weaver acclaimed "Philadelphia's living laboratory of urban renewal" for balancing its new projects with restored colonial buildings.

A presentation conducted by Edmund N. Bacon, executive director of the Philadelphia City Planning Commission, demonstrated the prominent role played by architects as promoters, consultants and designers in redesigning Philadelphia's downtown area. Architects appearing on the program included Vincent G. Kling, Oskar Stonorov, Roy F. Larson, and Robert L. Geddes, all of Philadelphia, and I. M. Pei of New York City.

The awards, along with the project tours and the rest of the program, suited the urban design theme. Le Corbusier, internationally famous architect and planner from Paris, received the AIA Gold Medal Award. The annual Citation to an Organization went to the Philadelphia Planning Commission, and a special citation went to the Columbia Broadcasting System for its TV production, "Big City—1980."

At the business sessions, the convention delegates defeated a proposal to open AIA membership with two new classifications. "Professional affiliates" would have included consulting engineers, planners and landscape architects licensed to practice. "Associate members" would have included architectural graduates who are working toward registration.

The delegates approved nominations for principal officers, all incumbents. They are: President: Philip Will, Jr., Chicago; First Vice President: Henry L. Wright, Los Angeles; Second Vice President: James M. Hunter, Boulder, Colo.; Secretary: J. Roy Carroll, Jr., Philadelphia; Treasurer: Raymond S. Kastendieck, Gary, Ind.

The by-laws were amended to limit the term of the national president to one year.

Convention registrations totaled some 2,400 persons, including corporate members, wives, guests, exhibitors and foreign visitors.

Senate Unit OK's Housing Bill

The Administration's omnibus housing bill passed its first congressional test last week when the Senate Banking Committee's subcommittee on housing approved it with only slight changes. The full Banking Committee is almost sure to follow suit.

• Mr. Kennedy asked that the Federal National Mortgage Association (Fannie Mae) be given authority to draw from the U. S. Treasury $750 million to finance its special assistance programs. He got that, plus discretionary authority to commit an additional $750 million.

• On Federal Housing Administration general insurance authority, the committee for the first time extended its operation to a given date—Oct. 1, 1965—instead of giving the agency authority to insure a fixed dollar volume of mortgages.

• On public housing, instead of approving authority to subsidize an additional number of housing units (35,000 per year in recent years), the committee approved 100,000 additional units, with no time period specified.

• A new provision would give the Administration power to cut by 50% the present ½ of 1% insurance premium paid by FHA mortgagors. (Robert C. Weaver, Housing and Home Finance Agency chief, says there will be no cut, even if this authority is finally approved.)

• The subcommittee adopted as part of the housing bill a measure authorizing up to $100 million in federal grants to local governments to help buy open space for recreational and park purposes.

Other programs approved include the following:

• FHA insurance for 40-year, no-down-payment mortgages for low-cost housing; nonprofit rental housing for low-income families; 25-year, $10,000 rehabilitation loans for housing, particularly in urban renewal areas; 12,000 additional units of Capehart housing for military personnel.

• $2.5 billion over 4 years for the urban renewal program.

• $1.3 billion for direct loans for college housing—with $100 million of this voted separately in a quickie bill being rushed through to supply funds to keep the program going from now through June 30.

• $50 million for the community facilities loan program.

• $50 million in direct loans for housing for the elderly.

Coming: Stronger Steels, New Uses

U.S. Steel Corp. gave 500 structural engineers and machine designers a peek into its crystal ball last week, at a steel design and engineering seminar in Pittsburgh.

The conferees learned that U.S. Steel is developing higher-strength steels and new ways to use them. A metallurgist reported good possibilities for producing a structural steel three times stronger than T-1, currently the company's strongest. And a structures engineer said that imaginative designers already are using the newer high-strength steels to cut construction costs.

• **Four-dimensional design**—J. A. Gilligan, U.S. Steel structures engineer, said the new steels add another dimension to design: ". . . The designer must concern himself not only with geometrical considerations but with that fourth dimension that is the selection of the most satisfactory and economical type and grade of material to perform the required function."

To utilize this fourth dimension, Mr. Gilligan pointed out, engineers must be as well versed in the scope of this dimension as they are with the laws of statics and dynamics and the geometric properties of sections. Thus, they should be familiar with the properties of the new steels—low-carbon A36 (ASTM designation) and A373, low-alloy A242, A440 and A441, and heat-treated T-1 and T-1 Type A (see table).

The last grade, with 100,000-psi yield point, is available now in the quenched and tempered condition in plates, bars, tubing and castings. But development work is currently under way to furnish it in sheet gages and rolled structural shapes.

Examples of how the "fourth dimension" of design already is being utilized include:

• A 600,000-bbl oil-storage tank Chicago Bridge and Iron Co. constructed in 1960 at Kuwait on the Arabian Gulf. It has T-1 plates in the lower courses, where pressure is greatest, and carbon-steel plates in the upper courses.

• Buildings in Chicago, Pittsburgh, Kansas City, Seattle and Portland, Ore. They have been designed with two different-strength steels in the columns. For example, columns below the 23rd floor of the 40-story United States of America building in Chicago are made of A440 steel, those above of A7 steel. All columns are 14-in. wide-flange sections, without cover plates. Steel savings: 800 tons (25.8%), $45,000. In addition, the smaller columns of high-strength steel make available more usable floor area and cut the cost of fireproofing.

• The recently completed Carquinez Strait and Benecia-Martinez Bridges in California and the Louisville, Ky.-New Albany, Ind., Bridge, now being erected. Their trusses are built of three different grades of steel. The higher the stresses, the higher the strength of steel used.

• Plate girders of the Whiskey Creek Bridge built in California and the proposed Dartmouth St. Bridge in Minneapolis. Three grades of steel were specified for flanges and webs.

• **Hybrid beams**—Mr. Gilligan also called attention to economies possible with a plate girder having T-1 flanges and A7 (or A36) carbon-steel web. The hybrid beam, 52% of which consists of the lower-cost carbon steel, is nearly as strong as a beam made entirely of T-1, which in turn, is three times as strong as one made entirely of A7. Mr. Gilligan estimated the reduction in strength due to the A7 web at only 8½%.

In tests at Iowa State University, a hybrid beam was loaded to produce strains in the T-1 flange about double that associated with yielding of the A7 web. Because the flanges remained elastic, web strains were limited and could not become excessive. Residual stresses in the web after removal of the load, in effect, prestressed the web and helped prevent further yielding in subsequent loading.

• **Prestressed girders**—Iowa highway engineers are using high-strength steel to prestress A36 bridge girders. During fabrication, portions of the girders that will be subjected to positive bending moments in the bridge will be permanently stressed by negative moments, and similarly, portions to carry negative moments will have positive moments applied.

To produce the prestress, the fabricator, Pittsburgh-Des Moines Steel Co.,

How ordinary and high-strength steels compare

1. STRUCTURAL CARBON STEEL

Steel (ASTM Designation or Trade Name)	Section Thickness (Inches)	Specified Minimum Strengths: Tensile Strength (psi)	Specified Minimum Strengths: Yield Point (psi)	Average Net Mill Price (cents per lb.)	Suitable for Welding
A7 Steel for Bridges and Buildings	All	60,000	33,000	6.4	NO[1]
A373 Structural Steel for Welding	To 4, Incl.	58,000	32,000	6.6	YES
A36 Structural Steel	To 4, Incl.	60,000	36,000	6.5	YES

[1]To one inch inclusive, YES. Over one inch, varies for different specifications.

2. HIGH-STRENGTH AND HIGH-STRENGTH, LOW-ALLOY STEELS

ASTM Designation	USS Brand Name	Section Thickness, (Inches)	Specified Minimum Strengths: Tensile Strength (psi)	Specified Minimum Strengths: Yield Strength (psi)	Average Net Mill Price (cents per lb.)	Suitability for Welding
A242 High-Strength Low-Alloy Steel	COR-TEN[1]	To ¾, Incl.	70,000	50,000	8.7[2]	YES
		Over ¾ to 1½, Incl.	67,000	46,000		
		Over 1½ to 4, Incl.	63,000	42,000		
A440 High-Strength Structural Steel	MAN-TEN (A440)	To ¾, Incl.	70,000	50,000	7.4	NO
		Over ¾ to 1½, Incl.	67,000	46,000		
		Over 1½ to 4, Incl.	63,000	42,000		
A441 High-Strength Low-Alloy Manganese-Vanadium Steel	TRI-TEN	To ¾, Incl.	70,000	50,000	8.4	YES
		Over ¾ to 1½, Incl.	67,000	46,000		
		Over 1½ to 4, Incl.	63,000	42,000		

[1]USS Cor-Ten Steel meets ASTM specification A-242 to ½" inclusive; over 1 to 1½" inclusive; over 2¼" to 3" inclusive.
[2]Cor-Ten price.

3. HEAT-TREATED CONSTRUCTIONAL ALLOY STEEL

ASTM Designation	USS Brand Name	Section Thickness, (Inches)	Specified Minimum Strengths: Tensile Strength (psi)	Specified Minimum Strengths: Yield Strength (psi)	Average Net Mill Price (cents per lb.)	Suitability for Welding
NONE	"T-1"	To 2½" incl.	115,000	100,000	15.5	YES
		Over 2½ to 6, incl.	105,000	90,000	15.5	
	"T-1" Type A	To 1", incl.	115,000	100,000	13.2	YES

for Them

will first bend wide-flange beams a predetermined amount. Then, welders will attach heat-treated plates to the flanges. When the flexing load is removed, the high-strength steel plates prevent the beams from returning to their original shape, thus prestressing them. The prestressed lengths will be assembled in the field with high-strength bolts or rivets.

Weight saving with prestressing is estimated at 26%.

• **Stronger steels to come**—R. W. Simon, U.S. Steel's vice president for metallurgy, said that the company had begun to use columbium as an alloy to provide increased strength at minimum cost. A recently developed columbium steel—EX-TEN—is available with a yield point up to 55,000 psi.

The U.S. Steel Applied Research Laboratory is giving considerable attention to development of a steel with a yield point of about 140,000 psi. Success here may not be far off.

The company has recently developed heat-treated complex alloy steels for aircraft landing gear, missiles and rockets. These steels, normalized or quenched and tempered, attain yield strengths up to 240,000 psi. Higher strengths do not appear practical by conventional heat-treating methods. However, Mr. Simon said, development work on precipitation hardening of a new stainless steel shows promise of achieving yield points in the range of 300,000 psi.

But U.S. Steel researchers are not stopping at this limit. They are striving to learn how to attain strengths approaching the binding force between iron atoms—over 4,000,000 psi.

G. Haaijer, assistant division chief, U.S. Steel Applied Research Laboratory, indicated that the relative increase in price of higher-strength steels compared with carbon steels is less than the relative increase in yield point. As a result, he said, use of higher-strength steels yields lighter weight structures, usually with savings in cost.

• **New light on column behavior**—Lynn S. Beedle, director, Lehigh University Fritz Engineering Laboratory, said that recent column research has made it possible to predict the strength of steel columns accurately. The results are particularly significant for high-strength steels.

The latest tests show that the Euler formula gives a close estimate of column strength if the tangent modulus of elasticity is used and if initial crookedness and residual stresses due to cooling after rolling, or due to welding, cold bending or heat treatment are taken into account.

103-Ft Sludge Tank Collapses

A cylindrical prestressed concrete sludge digestion tank collapsed without warning recently at New York City's 10-year-old Owls Head sewage treatment plant. The failure loosed a 2-million-gal deluge of half-digested sludge that bowled over three freight cars in the railroad freight yard next door and flattened part of the plant fence.

The tank is a total loss. About half the roof and a third of the wall are out, completely shattered.

This is one of a battery of eight, all of the same dimensions and construction. They are arranged in two rows of four each, and the cluster also contains a gas holder and two sludge storage tanks. Sufficient wall and roof sections are added between tanks to form an enclosure for operating equipment and personnel.

Inside diameter of the digester tanks is 103 ft. Sludge depth is 36 ft. Walls are 12 in. thick, prestressed both vertically and horizontally. The roofs are conventional reinforced concrete slabs, supported on the walls and on reinforced concrete beams and columns. A 30-ft-dia gas dome with steel cover and reinforced concrete walls rises a few feet above each tank at the center.

Vertical prestressing steel runs up the inside of the tank walls in chases 24 in. c-c. Chases each contain eight wires 0.196 in. in diameter. They are covered with $\frac{3}{8}$ in. of troweled mortar. Circumferential steel consists of wires 0.142 in. in diameter, continuously wrapped around the tank exterior. They are covered with a minimum of $\frac{3}{4}$ in. of sprayed mortar.

The city, the prestresser and a contractor who was giving the tank a new four-ply plastic roof are investigating the failure with the help of outside consulting engineers. The investigators have announced no conclusions. However, a Department of Public Works spokesman called corrosion of the steel a factor in the collapse, and a spokesman for the prestressing firm said he believes overloading of the tank roof with materials to be used in the roofing job was a factor.

The tank collapsed at 5:15 a.m. No one witnessed it or heard any unusual noise preceding it. It is believed to have happened suddenly. A railroad policeman on duty nearby said he first thought the cascading sludge was a "tidal wave," then realized it was coming from the wrong direction. (The tank is only a few hundred feet from New York Bay.)

The Department of Public Works has all but shut down the digesters. Only two are operating and they are working at only partial capacity. Normally the sludge is digested and then barged out to sea. Now only one-third of it goes to the digesters. The rest is being barged out to sea raw.

Deprived of the digesters' usual production of methane, normally used to generate all the power needed at Owls Head, the plant has switched to fuel oil.

City authorities are considering installing steel shells in the remaining seven digester tanks to forestall a possible recurrence of the collapse.

New York City's sewage treatment plants are under the jurisdiction of the Public Works Department, headed by Acting Commissioner Meyer F. Wiles. The Division of Pollution Control, under William O'Leary, exercises direct control. F. A. Lino is the engineer in charge at the Owls Head plant.

Outside consulting engineers engaged to investigate the collapse are Jacob Feld, New York City, for the Public Works Department; Schupack & Zollman, Stamford, Conn., for Preload Co., Inc., New York City, the prestress designer and subcontractor; and Simpson, Gumpertz & Heger, Inc., Cambridge, Mass., for Construction Associates, Brooklyn, the roofing contractor.

It's named after Leonardo da Vinci, but . . .

Rome's New Airport Is No Masterpiece

Engineer-architect-inventor-artist Leonardo da Vinci, for whom Rome's gleaming, new $50-million airport at Fiumicino is named, must be spinning in his grave like a lathe.

Although the huge international airport opened to commercial traffic only three months ago, its operators climaxed a steady series of disillusionments this week by closing down the main landing strip for two weeks to repair breaks that run for most of its 2½-mile length.

Leonardo da Vinci International Airport stands on a sand fill in marshland on the edge of the Mediterranean, near the mouth of the Tiber. Settlement of the fill and the impact of giant jet airliners combined to break up the main runway. Builders had previously repaved the main strip three times to cover ominous cracks.

The Italian government paid $21 million for the Fiumicino airport site in 1950, despite the fact that in 1944 the U. S. Army Air Force rejected the tract for use as a landing field for bombers. The Army was wary of the marshes and the heavy fog that hung over them on warm spring nights. Since the airport opened in late January, low-hanging fog has frequently forced incoming airliners to bypass Fiumicino and land at old Ciampino Airport.

But geology and climate didn't cause all the troubles at Leonardo da Vinci. Some of them were built in by designers engaged by the Ministries of Aviation, Defense and Public Works.

- The magnificent three-story terminal building is entirely glass enclosed and has neither windows that open nor air conditioning. On warm days it rivals the efficiency of the hothouses in Rome's Borghese Gardens.
- The terminal is no pleasanter in cold weather. Radiant heat pipes just below the surface of its rubber flooring send up nose-wrenching fumes of seared rubber.
- For lack of air conditioning or ventilation, jet fumes hang motionless in the terminal, making travelers ill on warm days.
- Only a three-lane highway connects Fiumicino with Rome, 15 miles away, and the same highway links Rome with popular Fiumicino Beach. On weekends and holidays the trip between Rome and the airport by bus or taxi takes as long as three hours, longer than it takes to fly from Rome to Paris.
- Da Vinci Airport was built only 11 miles away from Pratica di Mare, a military airport. Commercial airlines filed so many formal complaints of the dangers of this situation that Pratica di Mare had to be closed down to prevent collisions.

Fiumicino's 10 years of construction have been peppered with plan changes, errors, recriminations, resignations of engineers and architects and a secrecy that has had budget-minded Italians rumoring about financial hanky-panky among high officials involved in it.

Engineers in Rome estimate it will take at least another $50 million to complete Fiumicino's support installations and correct such shortcomings as inadequate fuel storage facilities, insufficient hangers, limited accommodations for 6,000 passengers and 400 planes per day.

Aluminum to Cross the Patapsco

Maryland will get its first aluminum highway bridge this summer, a structure of sheet aluminum and extruded aluminum shapes whose basic design is similar to that of an airplane wing.

The bridge's outer skin of sheet aluminum will be as essential to its structural strength as the aluminum alloy angles that make up its inner framework.

The bridge, 300 ft long and 40 ft wide, will cross the southern branch of the Patapsco River and track of the Baltimore & Ohio Railroad as part of State Route 32 near Sykesville, 20 miles from Baltimore.

The State Roads Commission says the bridge is not an experiment, but an example of its policy of "adopting new materials and new concepts of design when, in the opinion of the engineers, benefits can be passed on to the public."

The commission is particularly interested in the rust resistance of aluminum and the fact that it need not be painted.

The eight bids submitted for the job ranged from a high of $502,103 to the low of $342,943 from Peyton, Inc., the Baltimore construction company that won the contract.

Peyton is now excavating preparatory to erecting two reinforced concrete piers that will support the bridge's three 100-ft spans. Kaiser Aluminum and Chemical Corp., Oakland, Calif., will fabricate the bridge.

"We've never built an aluminum bridge before," says Peyton's Harry J. Peyton. "But we expect to be able to erect the spans as fast as the men can get the beams off the trucks."

The contractor will place a 7-in. concrete slab over the aluminum structure. The State Roads Commission will let a contract later for a 2-in. bituminous wearing surface.

The Sykesville aluminum bridge resembles two aluminum semi-monocoque bridges scheduled for erection in Amityville, N. Y. this summer (ENR Jan. 21, 1960, p. 38).

Dam That Nobody Wanted Fails

A small, 100-year-old dam in Middletown, Conn., needed repairs. No one was quite sure who owned the 35-ft-high structure and the mile-long lake behind it. Last year a nearby manufacturing firm that uses a little water from the lake offered the city water rights and the dam for a nominal sum. The city assayed the dam and the repair bill that came with it, but took no action.

Last week the little dam collapsed. A 3-ft-high wall of water swept through a residential area damaging 11 homes, slightly injuring three persons, and generally making a muddy mess of the area. The lake is nothing but a few puddles and a lot of mud now.

The firm that had offered the dam to the city now says there is nothing in the records "to show we do, or do not own it."

Early history of the dam is unclear. The State Water Resources Commission's files go back to 1940 and indicate the structure is over 100 years old. The 150-ft-long earthfill had a stone face on the downstream side. Commission engineers say it was probably built on sound engineering principles, in fact, its horizontal arch design might have been considered progressive.

The only overflow culvert was 3 ft wide and 2 ft deep, and the impoundment served a drainage area of about a half square mile. A Commission spokesman said that the spillway should have been three times its size. The dam had been leaking for some time. Just days before the collapse skindivers had checked some new damage reportedly caused by last winter's frost.

The dam that nobody wanted but everybody enjoyed is gone now—but not without a last splash.

Light Tower Contract Goes to Perini Corp.

The U. S. Coast Guard has awarded a $1,415,000 construction contract to Perini Corp., Framingham, Mass., for two offshore light towers located in Buzzards Bay, Mass., and at Brenton Reef off Narragansett Bay, R. I. The project will replace lightships with a manned tower at Buzzards Bay and an unmanned, remote control tower at Brenton Reef (ENR Mar. 30, p. 26).

Perini's bid was $372,300 below the next lowest figure, which was submitted by the DeLong Corp., New York City.

Tower fabrication will start immediately at the General Ship and Engine Co.'s East Boston Yard.

The Buzzards Bay tower will go up in four main sections; the smaller Brenton Reef tower will go up in three pieces.

The four-legged, submerged frames will be hauled to the sites by lighter and lowered into place. After construction crews drive piles into place through the hollow frame legs, the above-water frames will be erected in one piece from lighters. At Brenton Reef, the superstructure will then go on as a single unit. But at Buzzards Bay, the superstructure will weigh 216 tons, so Perini plans to erect it in two sections.

Perini will build the towers simultaneously. Erection, which should take only about a month, is scheduled to begin in July. Deadline for both towers is November 1.

First Peace Corps Mission Is for CE's and Surveyors

Four civil engineers, 20 surveyors and four geologists will be assigned as Peace Corps volunteers to the government of Tanganyika for a two-year period. They will survey feeder roads, do engineering on main territorial roads and make geological surveys.

Peace Corps headquarters in Washington already has begun sifting its thousands of applications for qualified recruits for this first mission. Three months training in the U.S. will include refresher courses in the respective technical skills of the volunteers, courses in American institutions, Tanganyikan history, culture, and institutions and courses in Swahili. This instruction will be supplemented by a month's training on the slopes of Mount Kilimanjaro under the direction of the Tanganyikan government.

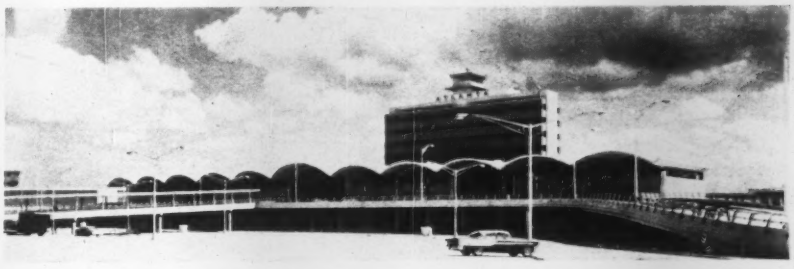
Volunteers will receive standard Peace Corps remuneration—minimal living allowances while in Tanganyika. Tents, jeeps, and other necessary equipment, which will be provided by local government. Upon completion of their tour of duty they will receive $75 for each month of service.

Here's Where the CIA Will Live

As the Central Intelligence Agency's publicity sunburn got redder last week following the Cuban crisis, construction quietly passed the three-quarter mark on its new eight-story headquarters in Langley, Va., near Washington, D. C.

Of a total $46 million appropriated for the project, about $37 million is being spent for construction of the huge building.

Harrison & Abramovitz, New York City, are the architects-engineers. The general contract went to a joint venture of Charles H. Tompkins and J. H. Jones Construction Co., since merged into the single Jones firm.



Atlanta Air Terminal Goes to Work

Atlanta's $20-million airport terminal begins service this week after more than two years of construction (ENR, Aug. 6, 1959, p. 27). The terminal has in it lots that is new.

- The main terminal is split: Departures are made from the upper main level; arrivals are handled at ground level. Eleven concrete barrel arch shells cantilever 25 ft out over an elevated roadway serving the upper level.
- Atlanta is an interchange point rather than a terminal, so counters are placed in each finger for airlines to handle passengers changing from one plane to another without sending them into the main ticketing area.
- The terminal has stands for 52 airplanes on 60 acres of concrete apron. The architects provided twice the number of positions they felt would be necessary if the airport served only as an end point for air travel.
- Airport officials are experimenting with small carts similar to golf carts for transporting passengers on the ground. Moving sidewalks were considered for the terminal but not included in the final design.
- The fire and crash equipment building is placed in the center of the field away from the terminal for quick access to any point of the runway area.

A 12-story administration building topped by the airport's new control tower dominates the structure. Ground level, extending out through the terminal, provides service areas for baggage claim, storage and for future expansion. The second floor contains the main ticket lobby and services for departing passengers. Tower floors above house city offices, FAA offices and commercial tenants.

Robert and Co. Associates, Atlanta, are the architects-engineers. Blount Bros. Construction Co., Montgomery, Ala., is the general contractor.

Around the World . . .

• **Close one at Yellowtail**—After errors disqualified a combine sponsored by Al Johnson Construction Co., Minneapolis, the U.S. Bureau of Reclamation awarded a $39.8 million contract for Yellowtail Dam to a joint venture under Morrison-Knudsen Inc., Boise. Competition was tight for the 520-ft-high arch on Montana's Big Horn River. Six of seven bidders were under BuRec's estimate. The Johnson bid at first appeared low with only a $20,000 spread between it and M-K's bid.

• **Gushing geysers**—Pacific Gas & Electric Co., first U.S. utility to cash in on steam from geysers, plans to double the size of its geothermal plant in Sonoma County, Calif. The utility will invest $2.2 million for a second 12,500-kw generating unit. PG&E buys the steam from Magma and Thermal power companies, owners of the steam wells.

• **Rockets go to sea**—The National Aeronautics and Space Administration is considering construction of an off-shore launching facility near Cape Canaveral for heavy space vehicles of the future. They foresee a shortage of sites at Cape Canaveral and a need for an isolated launching spot for nuclear rockets.

• **New hotel for capital**—Construction has started on the 14-story, 400-room Madison Motor Hotel in downtown Washington, D. C. Roscoe Ajax Construction Co., owner-builder, estimates the hotel's cost at $8 million. An adjoining office building, scheduled as part of the same project, will cost $5 million.

• **Curriculum change**—Effective July 1, Case Institute of Technology, Cleveland, will replace the present civil, mechanical, electrical and chemical engineering departments with an Engineering Division. This is in line with the trend of Massachusetts Institute of Technology, Harvard and Princeton. Prof. Ray E. Bolz will head the new division, with Prof. Harry R. Nara as second in command.

• **Frogmen to invade Ohio River**—The nearly complete Greenup Lock and Dam will eliminate the need for five old locks and dams on the Ohio, but blasters will do the actual eliminating. Lock walls, piers, and spillways will be removed to 15 ft below the level of the new pool behind Greenup Dam. Demolition will begin this summer.

• **Building program**—Columbia University plans to spend $68 million on buildings over the next six years. Of the total, $22 million will go into student housing. Nearly $38 million more will go into other major buildings, including an addition to the engineering center, which is still under construction.

• **Air rights plan**—City Wall Properties, Ltd., has gained approval for a $68-million building project over the Birmingham, England, railroad terminal. Birmingham architects Kelly & Surman plan a complex covering 20 acres, to take 10 years to build. It would include apartments, offices, a sports stadium, hotels, exhibition halls, ballrooms and a heliport.

Explosion Kills Boston Tunneler

One hard rock tunneler was killed and nine others injured last week when one of 48 holes being charged with dynamite exploded prematurely in a Boston water tunnel.

Both the construction company—a joint venture of Perini Corp., Walsh Construction Co. and Morrison-Knudsen Corp.—and the Metropolitan District Commission have investigations under way to determine the cause of the blast.

The accident occurred 400 ft underground about 3½ miles from the access shaft. The 14-ft-dia tunnel is in hard rock and will run eight miles from Wachusett Reservoir in Clinton, Mass., to a high pressure conduit at Northboro. The new tunnel is designed to increase Boston's water supply from Wachusett by 100 mgd.

The blast trapped 22 men for a half hour before rescuers were able to reach them.

The blast victim was tamping or had just finished tamping a 10-lb charge into one of the holes when it exploded.

Investigators are looking into whether an electrical storm that came up suddenly over the area at the time of the accident could have set off the blast.

The tunnel, begun in 1959, will cost nearly $20 million and be completed next year.

Planners, Engineers Feud Over a Northwest Passage

Seattle architects and merchants are battling on two fronts with the Washington Toll Bridge Authority and the State Highway Commission over location and design of highways within the city.

Complaints noisy enough to reach the executive mansion in Olympia are aimed at a freeway already under construction north of Seattle's business district and at approaches to a second bridge across Lake Washington.

The initial reaction from Gov. Albert Rosellini has been to promise to request the Highway Commission and the Authority to hire landscape architects to "help soften the impact" of the two projects.

The freeway has drawn the heaviest criticism. The heavy, closely spaced columns that support viaducts and overpasses have been widely denounced as a forest of trees by architect Paul Thiry, a member of the City Planning Commission, supported by businessmen and property owners of the First Hill area. The landowners there claim that the depressed section of the freeway will serve as a ditch that will cut them off from the business district. Mr. Thiry proposes building the freeway underground, covered by a park.

Opposition to plans for the approaches of the second Lake Washington Bridge is headed by Architect J. Lister Holmes, chairman of the Washington Roadside Council, and Victor Steinbrueck, faculty member of the University of Washington. Mr. Steinbrueck is active in a community group that is campaigning for elimination of two interchanges at the Seattle approaches.

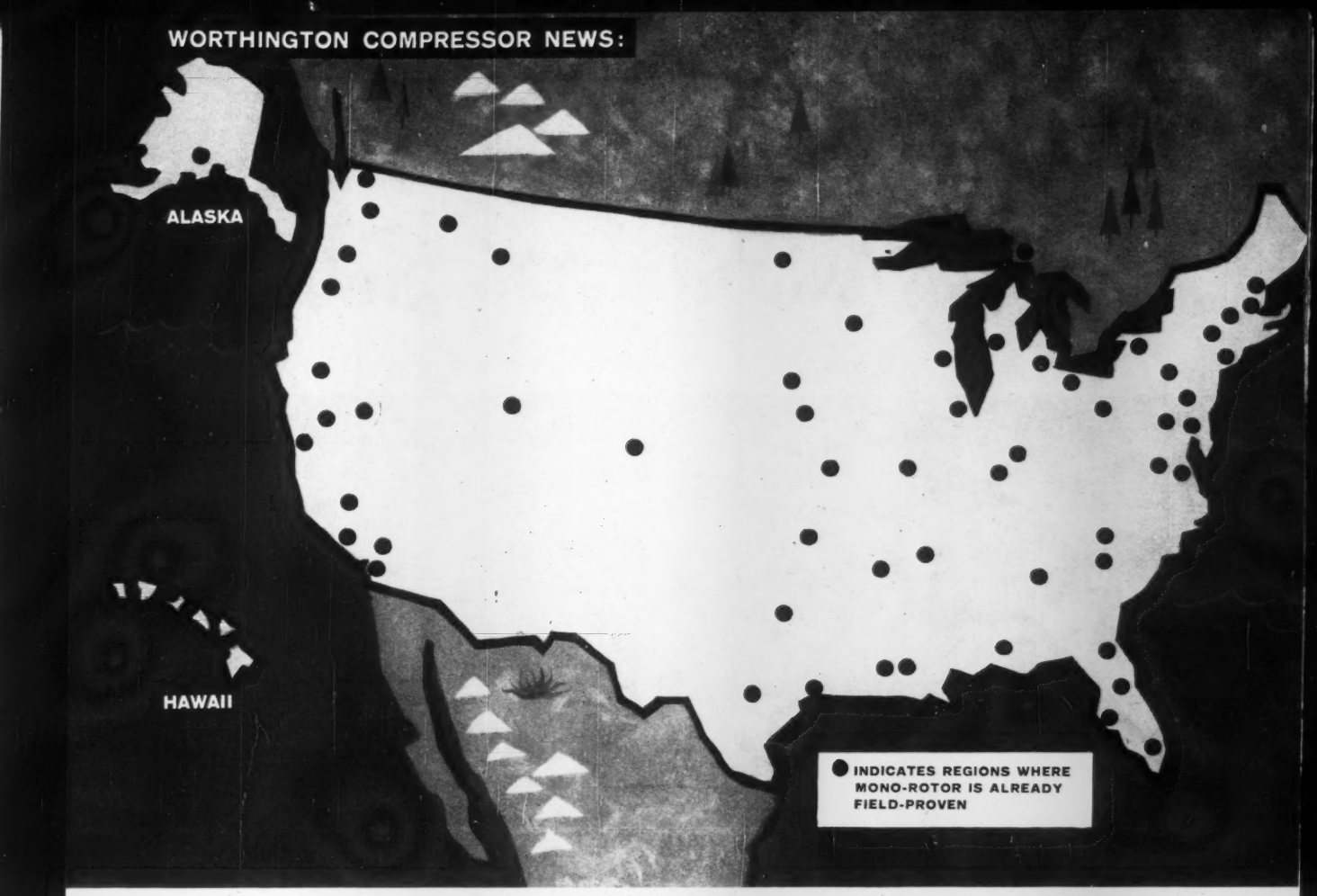
Prestressing Method Wins Top Soviet Science Prize

An electrothermal method of manufacturing prestressed concrete has won a coveted Lenin Prize in the USSR. The Soviets say that over 80% of the total volume of prestressed concrete produced in Russia today is made with the technique.

The Russian method is said to use electric current to heat and expand prestressing steel, which then shrinks and stresses as it cools.

The award winning system is quite similar to a method tried by the Freyssinet group in France several years ago and which is still in limited use there. Belgian engineers have also experimented with a similar method.

Current PRAVDA reports say that a British construction company is negotiating with Soviet agencies for a license to use the Russians' thermoelectric prestressing technique.

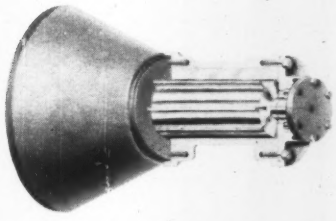


MONO-ROTOR PROVEN...WARRANTY QUADRUPLED

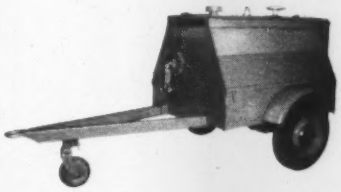
The new line of Worthington Mono-Rotor compressors has gained extensive field experience with outstanding success. Performance has been so successful, in fact, that Worthington has lengthened its warranty period from 3 months to one year. It is the first major construction industry compressor manufacturer to do so.

Mono-Rotor units have proven themselves in widespread areas over the last 3 years. They are in locations ranging from New York City to Hawaii—from Alaska to Argentina. Service conditions have ranged from the intermittent use in winter and summer to three-shift use for months at a time.

What makes the Mono-Rotor compressor so dependable? It is extreme simplicity.



MONO-ROTOR: 1 STAGE... 1 ROTOR... 2 BEARINGS... NO GEARS... NO OIL PUMP



NEW 125′ MONO-ROTOR BLUE BRUTE

It actually has 63% less parts than its two-stage predecessor. The Mono-Rotor has just one stage, one rotor, two bearings, no gears and no oil pump. No other compressor design is so simple.

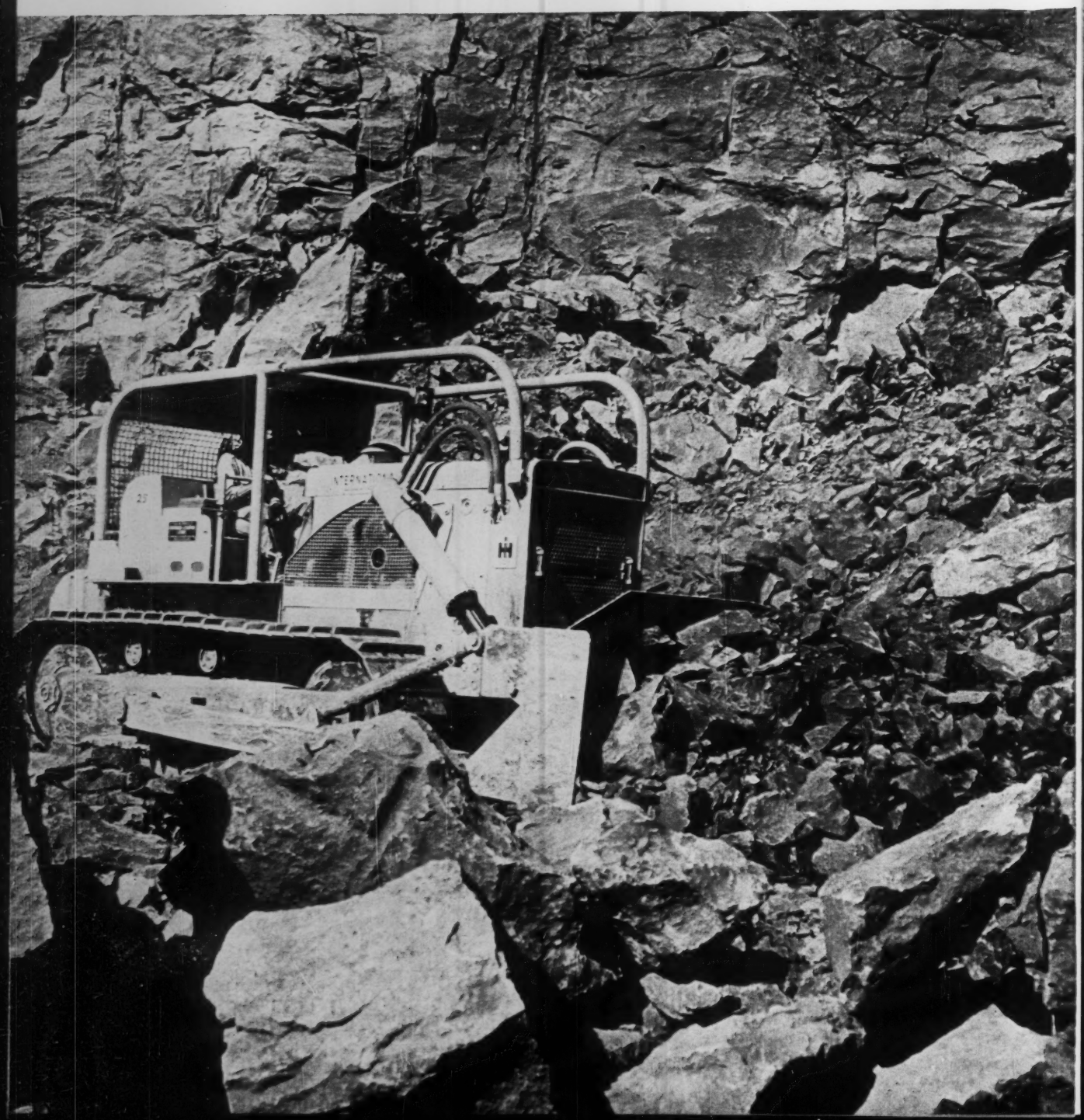
The new Worthington Mono-Rotor compressors have other benefits, too. They are 20% lighter in weight and are designed for improved towing and tracking. The 3rd wheel is standard equipment for easier handling on the job. It runs all day on a tank of fuel. There's an engine-saving clutch and many other features.

The Mono-Rotor can now be ordered in the 85′, 125′ and 250′ sizes. See it . . . rent it . . . or buy it at your Worthington dealer listed in the Yellow Pages under "compressors". Or write Worthington Corporation, Dept. 60-39, Holyoke, Mass. In Canada, Worthington (Canada) Ltd., Brantford, Ontario.

WORTHINGTON

PRODUCTS THAT WORK FOR YOUR PROFIT

TD-25'S *Full load, full pass ends load-dropping, track—*



PLANET-POWERED PUSH

—*stopping steering losses*

You Power-steer the International TD-25 by power-shifting either track. Full-time "live" power on both tracks, gives you full-profit production!

You make full-load turns without spillage — because Planet Power-steering eliminates load-spilling, load-limiting "dead-track drag."

With Hi-Lo on-the-go power-shifting, you shift down, to dig hard materials — shift up, to "run" with the load. When push-loading with the "25," you maintain solid contact on straight-away or curve — to speed heaping the bowls and get gear-higher "kick-outs"!

Exclusive Planet Power-steering makes the TD-25 the industry's only power-shifted 8-speed gear-drive, or 4-speed torque-converter tractor. And only the "25" is powered by the free-breathing, dual-valved 230-hp DT-817 turbocharged International diesel!

Compare bulldozing yardage delivered — time the push-loading advantages of the Planet Power-steered TD-25. Prove to yourself how "live-track" TD-25 push can multiply your "tight-bid" profits. Let your International Construction Equipment Distributor demonstrate!

"Hanging a bench" on a mountainside, the TD-25 operator either upshifts the bank-side track — or down-shifts the outside track. Then he makes full cuts under full power without "bank-nosing," rear-end skidding, or "lever fighting."

Moving thousands of tons of outcrop shot-rock for mountain road right-of-way, this TD-25 picks up and delivers its full loads without sluing or slipping. Reason: with Planet Power-steering you run one track in high, the other in low speed range to equalize offset loading. And you steer with full power on both tracks full time — to avoid load-dropping interruptions!

Power-gaining Planet Power-steering helps you heap-load scrapers in record time — right where clutch-steered pushers lose half their push! Power-shifting either track up or down keeps solid push-block contact on curves. Power-shifting up, on-the-go, gives gear-higher kick-outs than ordinary. And with 7.5 mph reverse, the "25" repositions faster than slower rigs!

International® Construction Equipment

International Harvester Co.,
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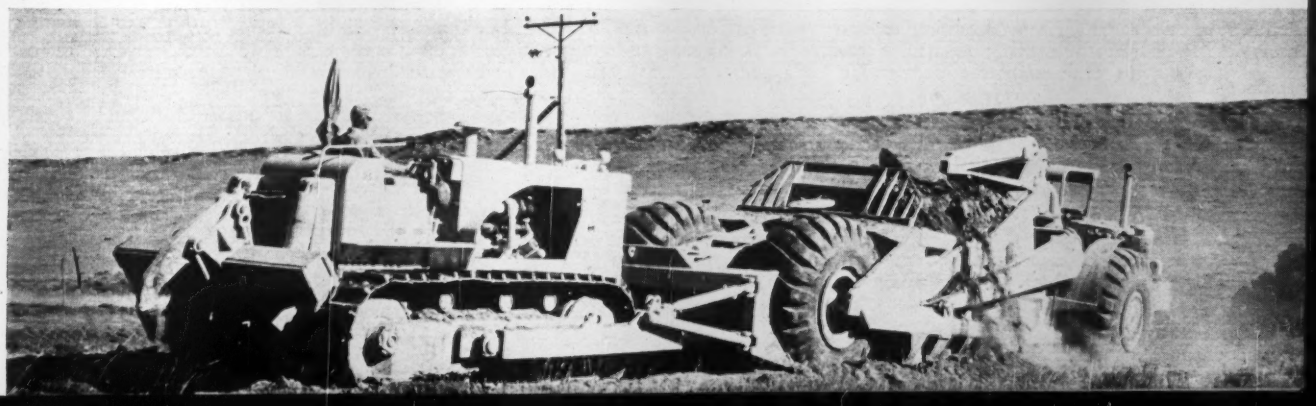
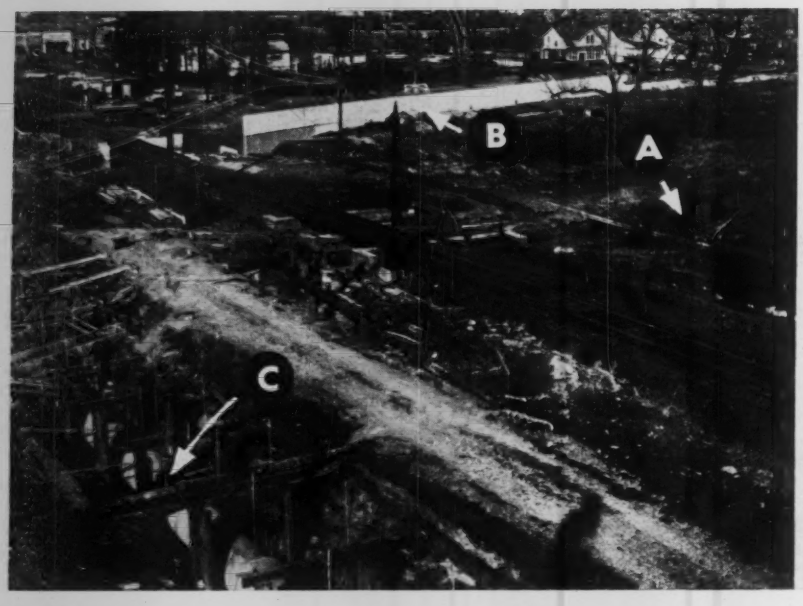
A COMPLETE POWER PACKAGE





Shallow brook (A) is diverted into wider, deeper flume (B). Problem was how to lower existing high pressure water main (C) without a shutdown of service. Here's what they did.

Squeeze, Stretch and Lower the Pipe

Lowering a large diameter high pressure water main by as much as 5 ft is no mean task under the best possible conditions. But in Englewood, N. J., a contractor did just that with no interruption of service in a 48-in. dia. main carrying more than 30 mgd under a pressure of 125 psi.

The contractor started with a 500-ft stretch of pipe that had in it a slight horizontal curve and two slight humps with a valley between them. Before he finished, he had just about removed the horizontal curve and had changed the wave to a single dip.

While the pipe was being lowered to the horizontal, some of its joints were squeezed together and some sections of the line were actually shortened; while the pipe was being lowered from the horizontal to the downward curve its joints were spread slightly and the entire line was lengthened.

And all the time that the pipe was being lowered and straightened and squeezed and stretched, hundreds of industries and some 200,000 people in nine cities and towns were using the water that flowed through the line.

The line, which belongs to the Hackensack (N. J.) Water Co., runs in a north-south direction generally parallel to the Hudson River and about 1½ miles west of it. It supplies water to five densely populated municipalities in northeastern Hudson County and four in southeastern Bergen County. At the Englewood-Leonia boundary, the pipe goes beneath Flat Rock Brook, a small shallow stream which at times carriers flood waters of torrential intensity in which there is much debris.

When the water main was originally installed in 1951, getting under the brook was no problem because of its shallowness. Current construction of Interstates Route 80, an arterial highway that will run from the George Washington Bridge to the Delaware River, makes it necessary to relocate the brook northward and to run it through a 30-ft-wide, 2,400-ft-long concrete flume. The flume is wider and deeper than the existing stream, and where it crosses the water pipe, its bottom is below the original elevation of the pipe. Hence the need for the lowering job.

Engineers of the water company considered closing down the line for the duration of the work after first installing two pressure taps and constructing a 7,000-ft-long temporary bypass. This, however, would have cost several hundred thousand dollars—perhaps two to three times the $125,000 now being spent.

The final plans for the job were developed by the forces of Adolph Domiano, chief engineer for the water company and those of Benson A. Tuchscher, production engineer for the Lock-Joint Pipe Co., of East Orange, N. J., whose pipe was used in the original installation. Norman Looker, engineer for H. W. Alward, Bernardsville, N. J., contractor who did the job, played an important role in designing the actual equipment used.

Here's the picture. The line is made of 16-ft sections of prestressed concrete cylinder pipe with an AWWA C-301 specification. Its joints have steel bell and spigot rings that confine rubber gaskets and provide an expansion joint that can be slid in or out for fractional parts of an inch without any impairment of the seal. It is this flexibility that made possible the method finally used in lowering the pipe.

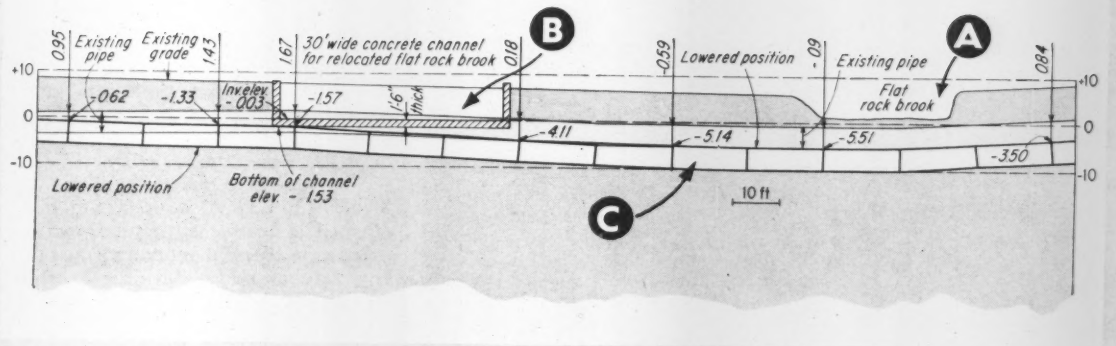
However, the engineers had to devise a means of controlling the joint slippage, for as one man on the job said later, "If that pipe comes apart, we'll be in Newark Bay (nine miles away) before we get our heads above water."

Here's how the job was done. The contractor placed four 24-in.-dia. pipes on the bottom of the brook so they spanned the area to be excavated. He then covered the pipes to form a dam that would force the brook water through the pipes.

Next, he backhoed a 25-ft-wide trench down to just below the top of the main, and as the trenching progressed, installed wellpoints on the outer edges of the resulting bench.

He then installed three 25-ft-long interlocking steel sheet piles on either side of each pipe joint (see drawing at right). He then used a clamshell to excavate a trench to the spring line of the pipe.

At this point the job became one of hand labor. Workmen dug small tunnels beneath each of the pipe joints, knocked off the mortar that covered them, and slid specially fabricated steel "U" straps through the tunnels to encompass the bottom of the pipes. While the straps were being installed, other crews were setting lifting frames across the tops of each set of steel sheets. These frames consisted of two 10-in. channels spaced 1½ in. apart and set back to back. Within each of these



— But Don't Turn Off the Water

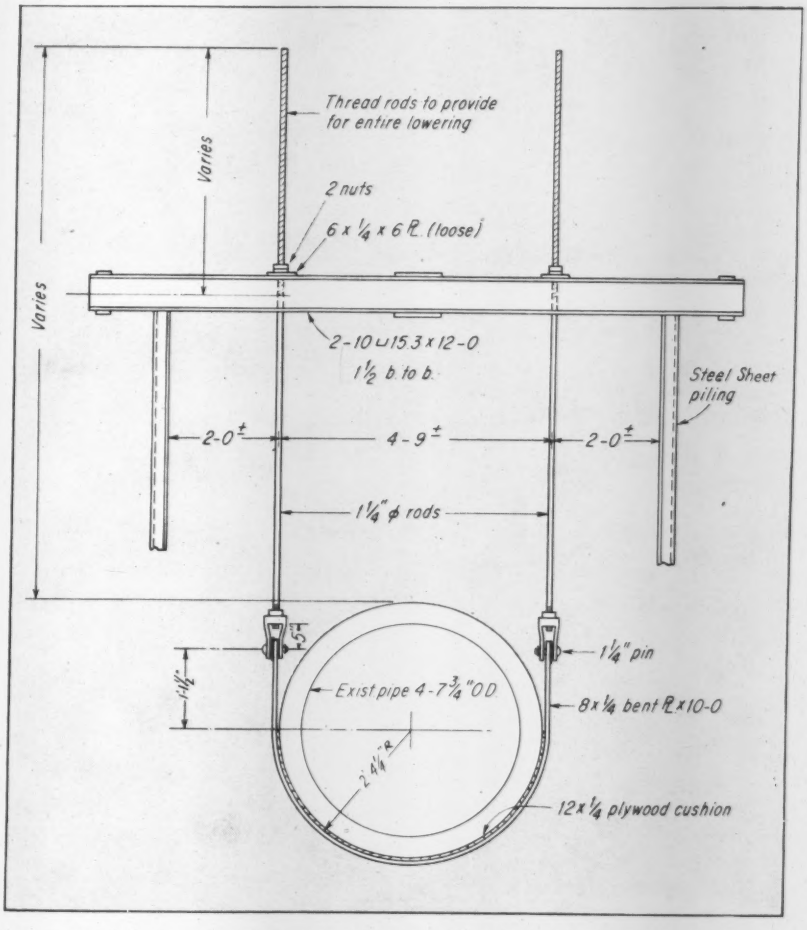
frames were hung two long, threaded, 1¼-in.-dia-rods, one on each side of the pipe. Each rod was supported on the cross-frame by a washer and two nuts and was connected to the pipe strap below by a clevis. Workmen then transferred the weight of the pipe to the lifting frames by running up the nuts on the rods.

The excavation was then completed to the desired depth, partly by clamshell and partly by hand, and a gravel base was cast beneath the pipe. (To reduce stone loss, the contractor had the material delivered in ready-mix trucks. He then chuted it into the bottom of the trench.)

With the base course leveled, the actual pipe lowering was begun. The job was done in stages. Workmen began at the center of the line to back off the holding nuts. On each successive frame, they backed off the nuts a little less. At the point of deepest lowering, elongation of the line threw the hangers out of plumb. To correct this, the contractor installed a second hanger at each of 16 joints. Then, by shifting the load from one hanger to the other he was able to plumb each free hanger.

With the entire 500 ft of pipe lowered slightly, the process was repeated again and again until all sections of the line were resting on the stone base. The contractor then partially backfilled the trench to hold the pipe, removed his lifting frames, sheeting and well-points, and completed backfilling.

The resident engineer for the Hackensack Water Company is C. R. Denton. Job superintendent for H. W. Alward is Angelo Ricco.



Lowering device includes U straps, threaded bolts and channels.

Supermarket Gets New T-Beam

Market floor sank as much as 14 in., needed replacement.

By Ernest Bianco

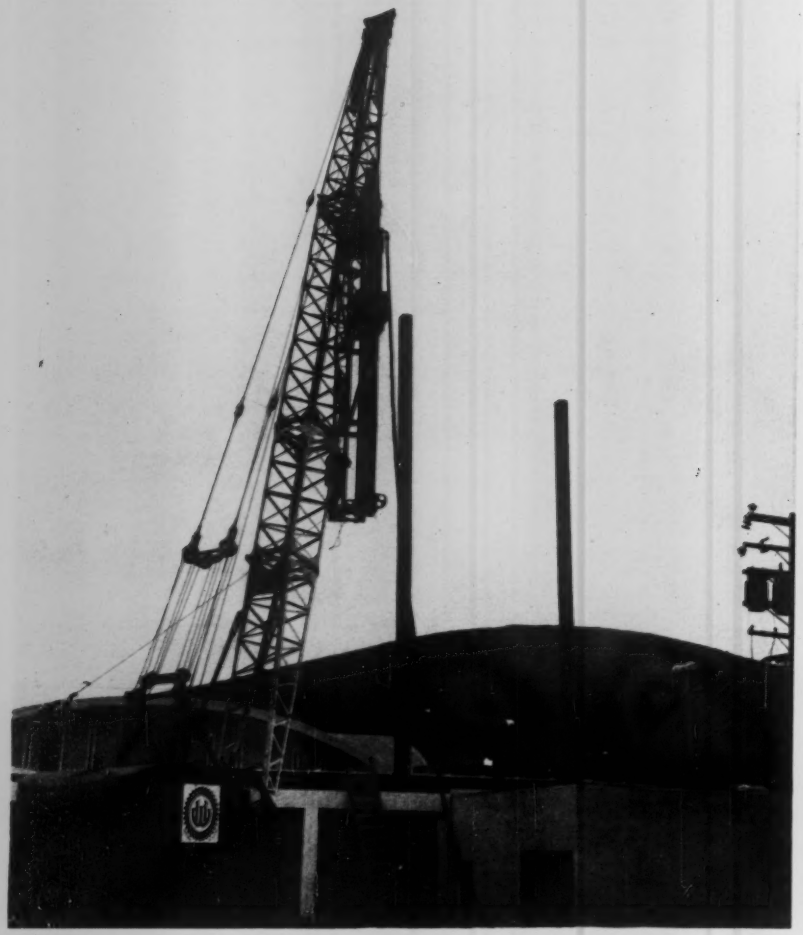
Down through the roof and in through the walls, workmen drove piles and threaded concrete girders to replace the entire floor of a California supermarket that was settling. And time equaling money in groceries, they had to do it all in five days.

The supermarket is located in Mill Valley, Calif., just north of San Francisco. The main steel-arch roof and the exterior walls were supported on piles. But the floor slab rested directly on fill on San Francisco Bay mud.

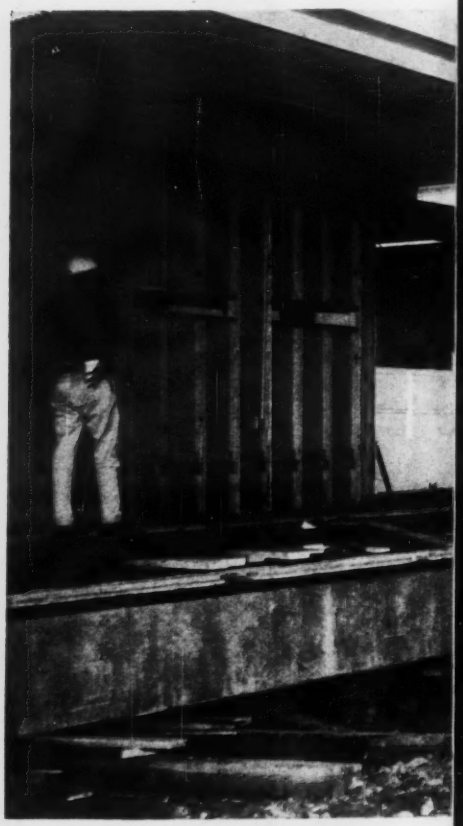
The pile foundation had shown little or no settlement in the six years since the store was built. The floor slab, on the other hand, had settled as much as 14 in. in storage areas and up to 10 in. in the main market.

Mud jacking did not stop the settlement. And most reconstruction methods and designs cost too much or would take too long.

Mr. Bianco is project engineer for Ben C. Gerwick, Inc., suppliers of the prestressed members for this project.



Rig drives piles through the roof to support the new floor.



New floor consists of prestressed

Floor in Only Five Days

Working with store representatives, I helped develop a floor system of prestressed, precast T-beams to meet the rigid construction time requirement. The 79-ft-long members span across the store between lines of steel girders supported on steel piles.

Construction followed this sequence:

On Sunday, the store was closed and stock and equipment were removed. A demolition crew then moved in with equipment to remove the floor slab.

On Monday morning, the floor was completely excavated to about 3 ft below finished floor level, and two pile-driving rigs started driving 10H57 piles. Steel piles were used because they would be able to penetrate grout pockets from mud-jacking that might be encountered. Piles were driven in two rows, one down each side of the market, 3 ft inside the exterior walls.

The piles were extra long so that they could be slipped through holes in the roof and driven by equipment outside the building. As soon as a pile was driven to capacity, workmen cut it off near grade inside the building and the extra length was pulled out through the roof. Then steel workers welded a bearing plate on the pile top. After the piles were driven, cut and fitted with cover plates, workers threaded steel 12WF53 girders into place over the piles and welded them to the plates. By Monday night, all piles were driven and the girders were in place.

Erection of the precast, prestressed tees began early Tuesday morning. By Thursday afternoon, all 20 tees were in place.

Perhaps more than any other operation, positioning the 16-ton tees was the key to meeting the schedule. Holes just large enough for the tees were cut at three locations through the exterior wall on one side of the building. Ties and rails were laid down for the full width of the building and a steel carriage placed on the rails. Two truck cranes jockeyed a tee into position until one end of the tee rested on the carriage. Then one crane pushed the member into the building while the other moved to the opposite side of the store. Working through holes in the roof, both cranes lifted the tee off the carriage and placed it on the steel girders. Then, tuggers slid the tee sideways into position.

Most of the tees are 32 in. deep, 6 ft wide, and 79 ft long. However, special sections with a reduced depth of 18 in. for 11 ft at each end were needed to clear existing foundation beams under the central columns of the building. All tees were pretensioned with deflected $\frac{7}{16}$-in. strands.

To transmit large shear forces, the 3-in.-thick flanges of the tees were keyed along the edges and shear connectors were inserted. These consisted of angles welded to embedded plates.

The edges were also recessed to provide for a grout strip running between the tees to keep the final surface smooth. Nonshrink grout provided a high-quality joint in addition to high early strength.

As soon as the tees were installed, the top surface was coated with asphaltic sealer. Floor tile was then placed directly on the tees to complete the floor without taking time to lay, finish and cure cement topping.

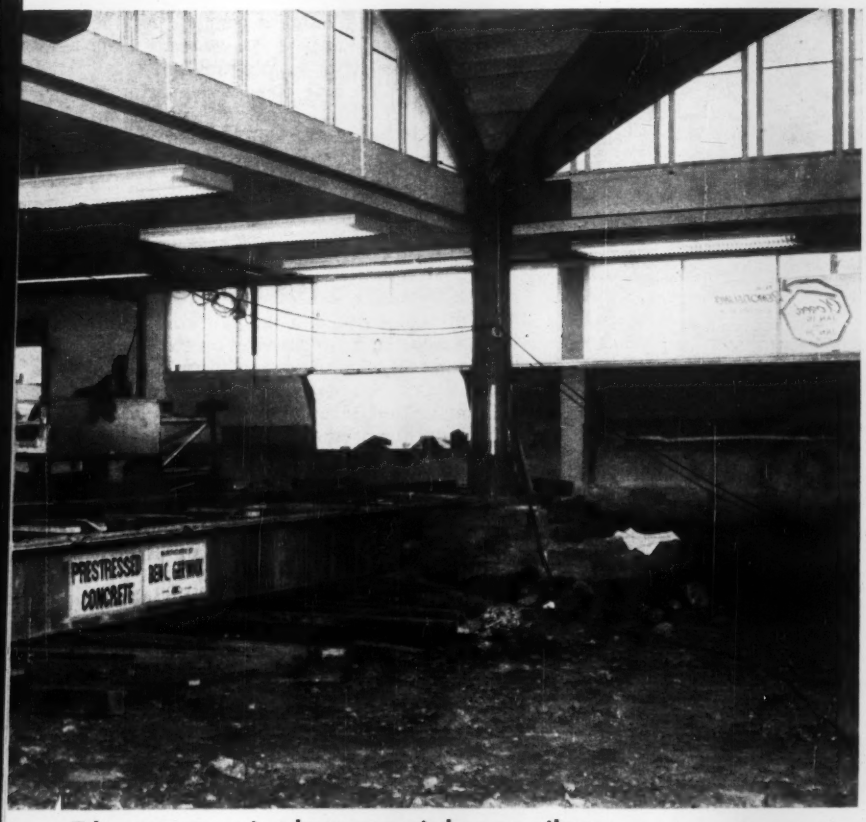
We expected differential camber between adjacent tee sections to be a problem. But even though the prestressed members were all cast in lightweight concrete, the final camber of the standard sections was within $\frac{1}{8}$ in. of the theoretical in all cases. (The tees with reduced depth tended to develop most of their camber between the supports and the depth transition point.)

A camber problem did develop however, with a tee designed to support heavy refrigeration cases along one end wall. Camber of this tee with full superimposed load was to be the same as the camber of the adjacent unit, which, being under an aisle, had no stationary live loads. Before the connections between tees were made, the special tee was loaded with weights until the tops matched. Then the welds were made and the joints grouted. The refrigeration equipment was installed with the special tee loaded at all times.

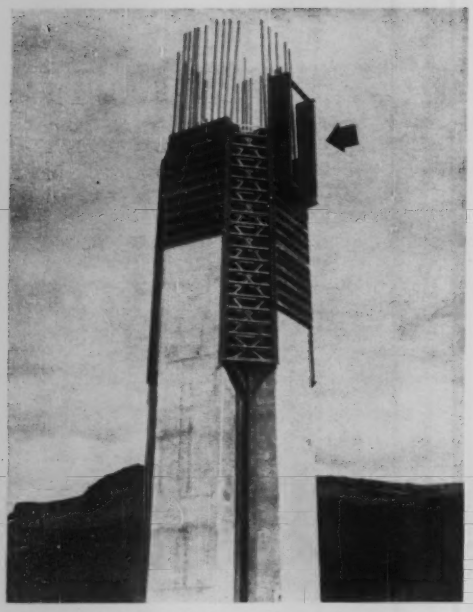
Mechanical and electrical systems were relocated along 3-ft closure strips between ends of the tees and the exterior walls. This strip was filled with cast-in-place concrete.

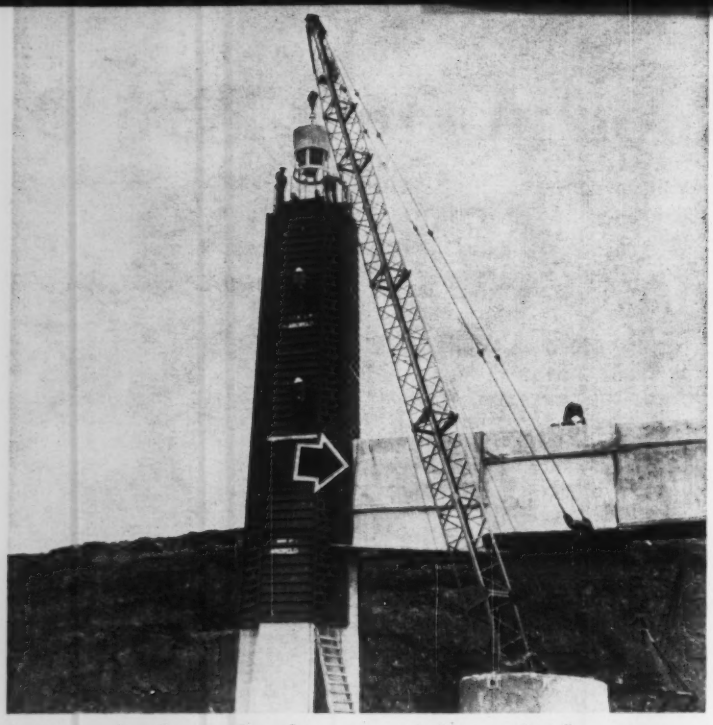
The cost of replacing the floor with precast, prestressed tees proved to be considerably less than that estimated for a conventional cast-in-place slab on pile foundations.

Richard Wysong, construction engineer for Purity Stores, coordinated the job. Structural design was done by the J. H. Pomeroy & Co., Inc. Prestressed concrete tees were manufactured by Ben C. Gerwick, Inc. Both are San Francisco companies. Arthur Bros. of San Mateo, Calif., was general contractor.



T-beams spanning between girders on piles.





Dutchman fixed to column-forms . . . ties into the forms for the cross girder on bridge piers.

Steel Forms Shape Tapered Piers

Forms go up for next pier. Last one is ready for stripping.

They're using prefabricated steel forms to build tapered cruciform pier columns of reinforced concrete for the $6-million Vantage Bridge across the Columbia River in Washington.

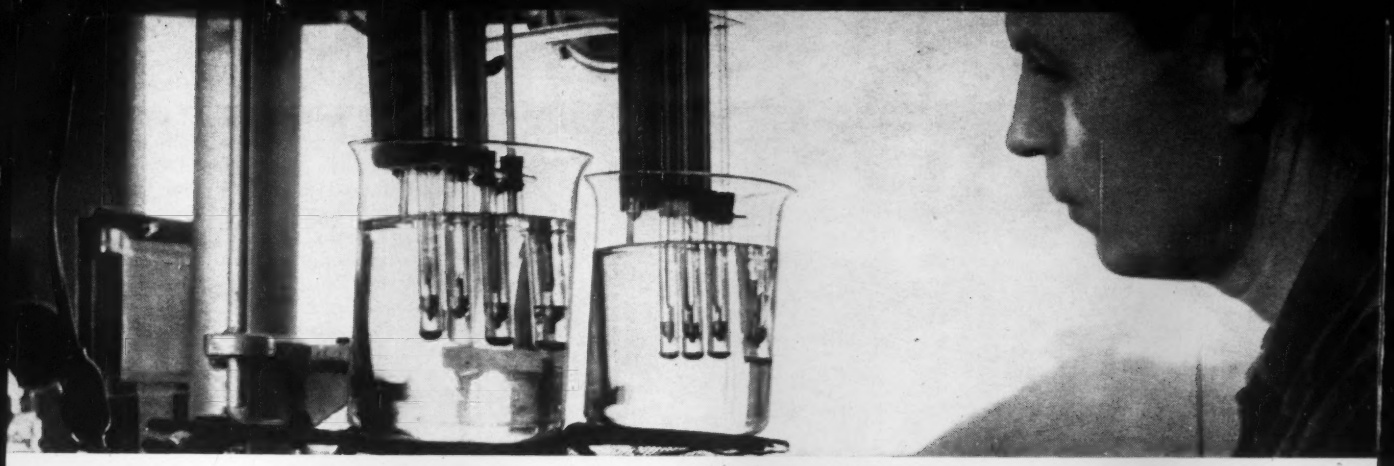
There are nine piers, with maximum height of 156 ft. Each pier is made up of two columns tied together by reinforced concrete girders 55 ft long.

The subcontractor who made the forms estimates a saving of $54,000 in construction costs on the project. Glenn Edwards, project engineer for the pier contractor, Manson Construction & Engineering Co. of Seattle, would not divulge costs, but he said the forms would pay for themselves on the project and still be available for future use. The Washington State Highway Department may standardize on this type of pier for large bridge projects.

Each column is designed so that the corners taper while the four flat surfaces are the same width (5 ft 6 in.) from top to bottom.

The re-usable forms consist of interchangeable steel face panels 10 ft high, corner forms 20 ft high with faces as wide as 4 ft at the bottom of the column and main girder panels that are 40 ft long.

Designed and fabricated by Arcweld Manufacturing Co. of Seattle, forms are made of $\frac{3}{16}$-in. steel plate. Face panels are stiffened with 4 x 3 x $\frac{1}{4}$-in. structural angles spaced 12 to 16 in. c-c, with the angles turned up to form a ladder. The corner forms are framed with 2 x 2 x



Dropping point test shows how greases react to heat. Beaker fluid has been heated to 390° F. All greases tested except Darina (second tube from left) have passed from solid to liquid state.

BULLETIN:

Shell reveals the remarkable new component in Darina Grease AX that helps it last up to 3 times longer than soap-base greases

Darina® Grease AX is made with Microgel*, the new thickening agent developed by Shell Research.

Severely tested for 18 months, Darina AX with Microgel proved its ability to resist washout, even in mud and slush—stay smooth and buttery at high temperatures—and reduce maintenance.

Read how this superior new multi-purpose grease can help solve your lubricating problems.

THERE IS no soap in Darina Grease AX. No soap to melt away—wash away—or dissolve away.

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What Microgel does

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Even compared to soap-base greases, Darina AX provides significantly greater protection under adverse service conditions.

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Shell scientists tested Darina AX, under wet conditions, in a special device called an Oscillating Friction Machine.

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Results of field test

In a recent field test, 15 firms used Darina AX in chassis and wheel bearings of over 1000 vehicles. These buses, trucks and vans rolled up 30,097,000 chassis miles. The results:

1. Every company was pleased with the performance of Darina AX.
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¼-in. angles and cross braced with ¼-in. flat bars. Form sections are joined by ¾-in. bolts spaced 6 in. c-c. An exception is the "dutchmen" linking the column forms with the girder forms, where spacing is 3 in. c-c.

For erection, the fabricator marks the corner sections so they can be placed in proper order up the column. Ironworkers first place a corner section, sometimes bolting together two 20-ft lengths on the ground. They then bolt the face panels to the corner section and continue the process. After the bottom forms are removed, a temporary vertical steel beam provides support when forms are placed for the cross girder. Later, the 50-to-1 taper of the column holds the forms in place.

There are two cross girders on each pier except the highest, which has three. Separate sets of forms are used for the 4x10-ft lower and 4x14-ft upper girders. Each form is made up of 20 pieces.

The main cross girder-form member comprises ⅜-in. steel plate stiffened by 12-in. trusses on 12-in. centers. Each truss is made up of a ⅞-in. round bar continuous web, with the chord a single 2x2x¼-in. angle. Upper flange of the girder is stiffened laterally by a horizontal Warren truss 3½ ft deep. Soffit forms are ⅜-in. plate with 3½x3½x¼-in. angles on 12-in. centers as transverse and longitudinal stiffeners. U-shaped fillers span the space between the main panel and the dutchman at each column.

Cranes handle the forms and the concrete. No falsework is required, as the workmen move around on the "ladders" on the exterior of the forms.

A 10-man crew requires two days to place forms and reinforcing steel for each lift on the columns, three days for a cross girder. Lifts vary from 20 to 30 ft. They require 50 to 100 cu yd of concrete, compared to 150 cu yd in each cross girder. Workmen strip forms from the bottom up, requiring one day for each lift, after the concrete has cured for 10 days.

The bridge, a 2,504-ft, four-lane structure, will replace an existing two-lane bridge, which will be flooded in 1963 by the reservoir of Wanapum Dam, now under construction downstream. It will include six 120-ft continuous, riveted, plate girder spans; a 522-ft tied arch; and two 325-ft anchor spans. The deck will be 166 ft above the present river level and a minimum of 75 ft above level of the reservoir. American Bridge Co. will erect the superstructure. Completion of the structure is scheduled for late 1962.

R. H. Pyle is Yakima district engineer for the Washington State Highway Department; B. F. Hansen is resident engineer. Gus Lorenz is superintendent for the pier contractor.

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CF&I — a nationwide steel company — provides many different steel products for all types of construction, including sports stadiums like the one shown above.

CF&I Prestressed Concrete Strand and Wire **(A)** give the necessary tensile strength to precast concrete beams used in the grandstands of the stadium. These lightweight beams are also widely used in the underground parking area and the ramps leading to the stadium.

CF&I-Wickwire Wire Rope **(B)** could be used to support the transparent plastic roof which folds like an accordian at the arch. For more standard construction uses, CF&I's premium wire rope, Double Gray®-X, gives extra-long life because its wires are protected by a molecular shield of molybdenum disulphide. And *CF&I-Wickwire Wire Rope Slings* **(C)** are selected for safe, dependable hoisting.

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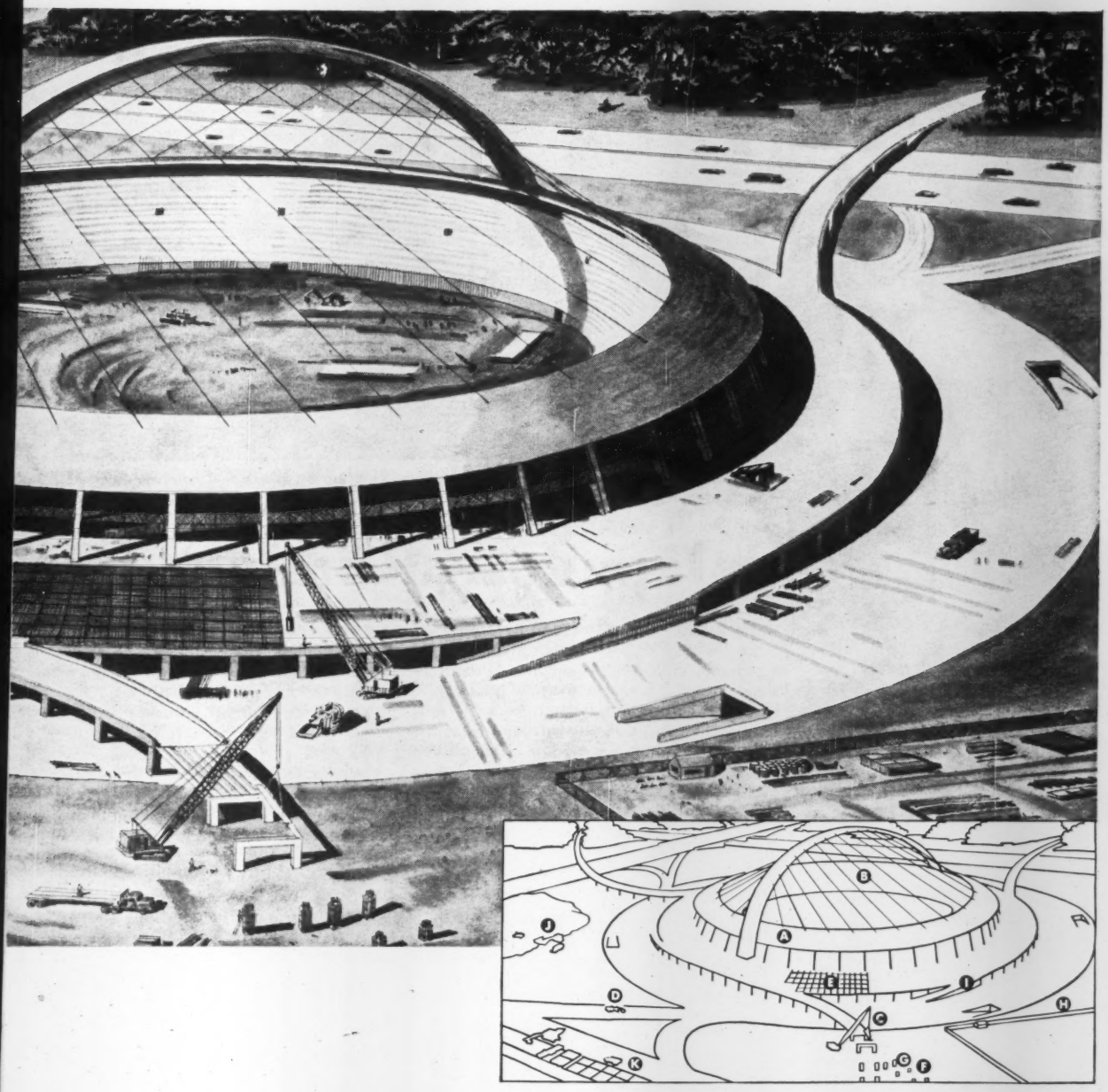

three-tier parking areas. And *CF&I Cal-Tie Wire* (**G**) in convenient belt-borne reels, permits safe, fast, economical tying of the rebars.

For maximum security of material and equipment stored outdoors, the contractors choose an easy-to-install *Realock Chain Link Fence* (**H**). It is widely used around parking fields and to control the stream of traffic from the parking areas to the stadium. In addition, Realock Fence is used to separate grandstand sections and is ideal for crowd control along overhead ramps and walkways.

Thousands of pounds of *CF&I Nails* (**I**) are used for wooden scaffolding and concrete forms, while much of the gravel and aggregate is sized on *CF&I Industrial Screens* (**J**). And *CF&I-Wickwire Automotive Springs* (**K**) are extensively used in trucks and service vehicles.

More and more contractors now realize that a domestic steel company—like CF&I—is best equipped to supply them with dependable steel products and expert on-the-job technical assistance. For complete details, contact a nearby CF&I office or write for Catalog G-104 "CF&I Steel Products for the Construction Industry."

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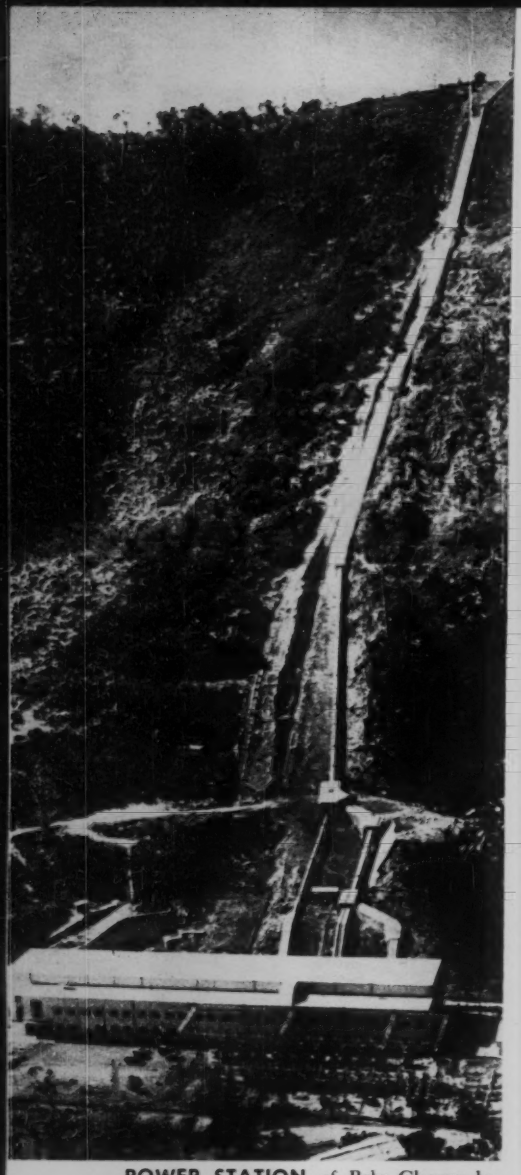
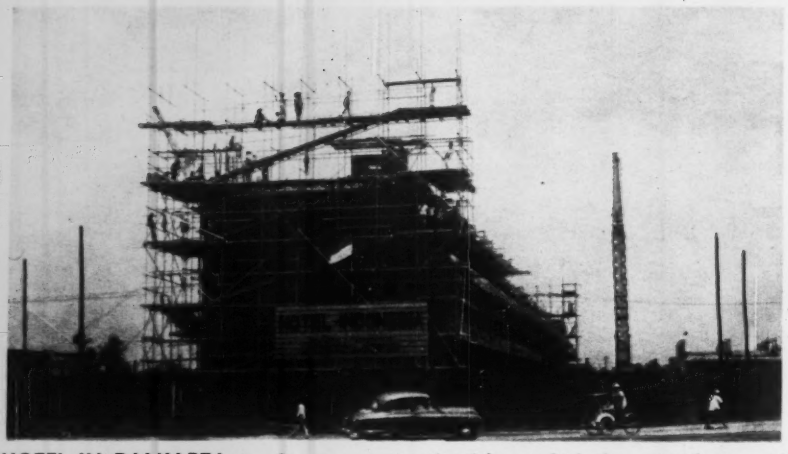


POWER STATION of Balu Chaung hydro project in Burma is Japanese project.



HOTEL IN DJAKARTA is a Japanese construction job on which the materials are paid for with reparations funds.

Japanese Builders Eye

Japanese contractors and engineers are on the verge of entering the world markets in competition with American and West European firms. Until now the Japanese have been busy with reconstruction in their own country as a part of the enormous boom that has once again made Japan a major industrial power. But three factors are pushing Japanese builders toward thinking about projects outside their own country:

Their widespread belief that the Japanese government will in the future offer more help in overcoming what the construction industry believes is its greatest competitive disadvantage—financing.

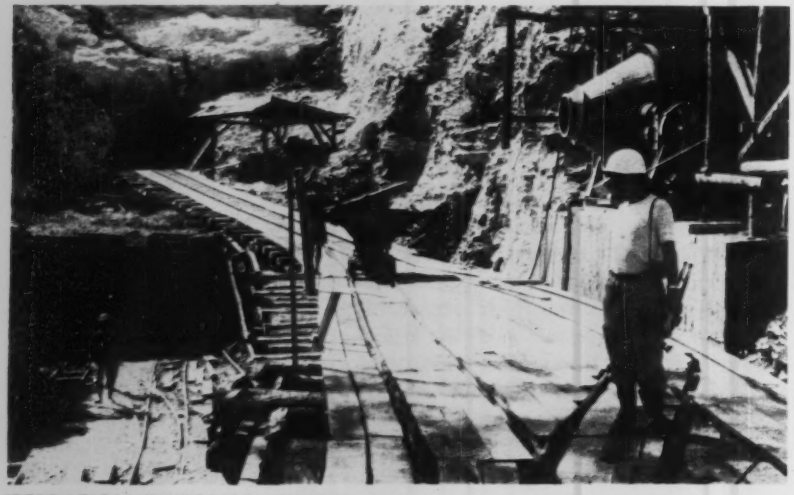
New confidence in Japanese technological know-how based on a series of Japanese overseas projects which, within the framework of the Japanese reparations program to Southeast Asia, largely, have given the Japanese a protected "laboratory" to develop overseas experience.

A predicted slowdown in the Japanese domestic construction boom.

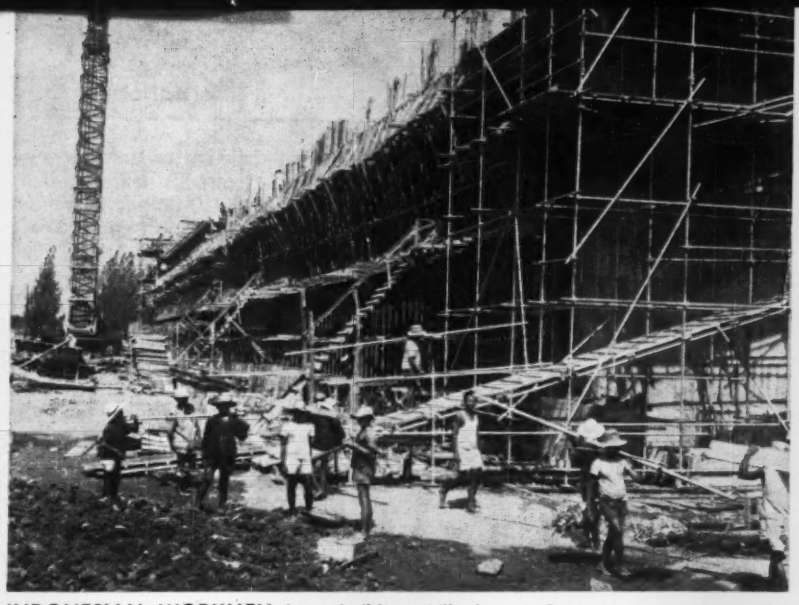
Industry sources report that numerous invitations to bid on foreign projects have been received—largely from Southeast Asia, the Near East, and Latin America. In 1959, for example, the Japanese received 29 invitations and in 1960 the total was 27. Even though no bids were entered last year, and Japanese contractors failed to win any of the three projects for which they bid in 1959, optimism is rising that this situation will not continue.

Japanese engineers, in the meantime, are becoming a force to be reckoned with abroad. Since 1951 more than a hundred different Japanese engineers—largely on government-subsidized assignments—have consulted with eleven Asian governments.

In addition, Japan has been granting scholarships to Asian engineers to come to Japan for study—an average of about 25 each year since 1951. They study at Japanese universities and with Japanese government agencies for periods ranging from three months to a year. Few Asians can fail to be impressed by Japan's industrialization. And the fact that it has been largely Asian-directed from its inception in the middle of the last century is a powerful factor in suggesting to many Africans and Asians that Japanese technology may be more



IRRIGATION DIVERSION TUNNEL in Java is a Japanese-Indonesian project.



INDONESIAN WORKMEN learn building skills from a Japanese contractor on this Djakarta hotel job.

the World Market

adaptable to their own problems than the perhaps more developed technology seen in the U. S. and Western Europe.

Japanese construction companies complain bitterly in private that their failure in the past to win contracts in international competition is the result of the government's negative attitude. They say, for example, that the West German government is much more helpful in seeking out possibilities for German contractors and helping them meet the short-time financing often required.

Certainly financing in the Japanese domestic construction market presents a difficult problem for the Japanese builder. Short-term money (four to six months) can be had under the very best conditions at not less than 7.3% annual interest. And this rate would probably only be available to a construction firm building a project for one of the zaibatsu (the huge Japanese vertical cartels) where it is possible to borrow from a bank belonging to the particular zaibatsu's group of companies. Less secure projects might be forced to borrow at 9.5% from trust funds or insurance companies, and such a loan would need reinsurance from one of the large city banks at an additional 0.36% interest.

This enormous problem of financing any undertaking in the construction field explains the peculiar nature of Japan's current building boom. Most large office buildings in Tokyo, for example, require large "loans" from the future tenant, repayable in 10 or 15 years at a nominal rate of interest. This payment is in addition to rent, and usually is demanded of a future tenant before construction gets under way.

A typical office renting situation would require $500 per tsubo (a Japanese measurement approximately 6x6 ft) on loan for 15 years at 1.5% interest in addition to monthly rent of $10 per tsubo not including heat, light and maintenance. And these figures are for a relatively low cost building. One American firm, for example, which is now moving into new quarters in the downtown Tokyo area, finds that it will be paying some 15 cents more per square foot annually than it does for similar space on Fifth Avenue in New York.

Because of the serious problem of financing, Japanese overseas construction has been limited to situations where the Japanese government offers special credit or payment terms. Most of these projects are connected with Japan's reparations program to the nations of Southeast Asia, which it invaded and occupied during World War II.

The most important of these reparations projects are; the Balu Chaung hydro project in Burma, the Da Nhim hydro project in South Viet Nam, a hotel in Djakarta, Indonesia, and the Marikina dam in the Philippines.

Balu Chaung is a 240,000-kw project —dam, powerhouse and 200 mile transmission line to Rangoon—whose first stage of 84,000 kw was completed about a year ago. The initial project was planned by Yutaka Kubota, head of Japan's Nippon Koei, an engineering and construction firm. Kubota, a powerful figure in Japanese politics as well as in the construction business, was the central figure behind many of the Japanese projects built in Occupied Korea and China under the Japanese before and during World War II. His most famous project was the construction of the Yalu River dams on the Korean-Manchurian border. The Burmese project, being built by the Kajima Construction Co., will cost Japan an eventual $25 million, with Burma paying an additional $25 million.

Da Nhim, originally conceived by French engineers before World War II, will have a capacity of 500,000 kw in three plants. A contract for the first stage work was awarded to the Nippon Koei Co. late last year. The ultimate project cost is estimated at $49 million. Costs are to be met out of Japanese reparations payments, and local costs will be met by selling Japanese goods in the Vietnamese market for local currency.

Designs for the initial No. 1 power station (160,000 kw) have now been completed. Construction is expected to get under way this spring by a joint venture of Kajima Construction Co. and Hazama-Gumi Ltd.

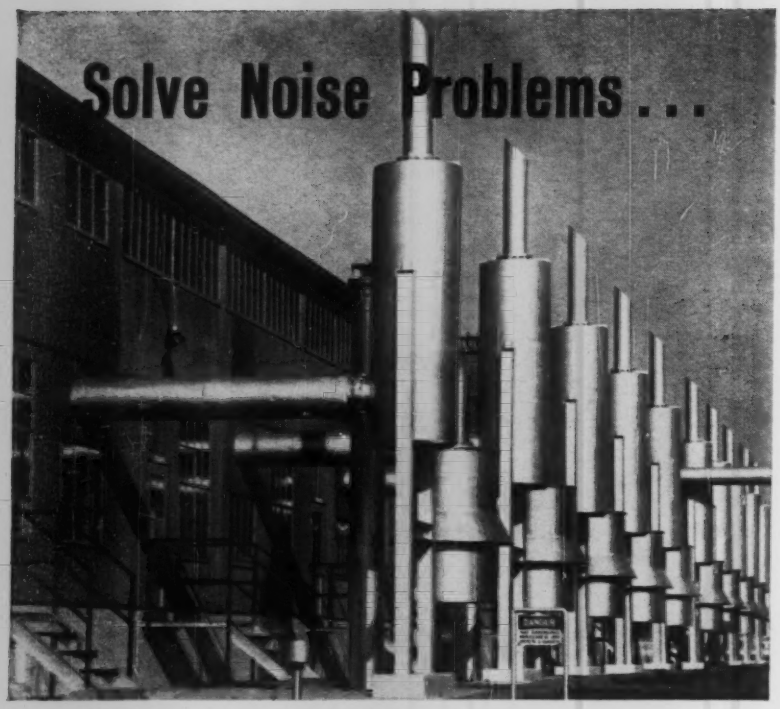
The Hotel Djakarta in Indonesia is under construction by the Taisei Construction Co., one of the Japanese "big five" construction firms. Materials are to be paid for out of reparations funds, and building costs will be assumed by the Indonesian government on a "commercial basis," with reparations funds being used as insurance of the project, since payments are deferred. The total project will come to about $8.5 million. It will be a 14-story reinforced concrete building with 417 guest rooms, which it is planned to have available in time for the Fourth Asian Games to be held in Djakarta in 1962.

The Marikina multi-purpose dam project on Luzon Island in the Philippines envisages a $54-million construction job to supply 50 billion gal of industrial water and 30 billion gal of irrigation water for the area annually. There would also be a 62,300 kw power plant. The Japanese will pay for $35.5 million of the cost as reparations, and the remainder will be met with local currency by the Philippines under a deferred payment plan.

Finally, Japanese reparations are helping to build an irrigation diversion tunnel at Tulungagung in East Java. Slightly over a half-mile long and 23 ft in diameter, it is about complete. It was designed by Nippon Koei, and its construction has been a joint effort of Indonesian construction companies and Kajima Construction Co.

Outside the reparations schemes, the most ambitious Japanese overseas project is the construction of an integrated steel mill in Brazil, including the development of iron deposits, construction of a railway, and eventually, a shipyard.

(Please turn the page)



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The project—called Usiminas Siderurgicas de Minas Gerais, SA—will eventually cost more than $220 million. The first stage of construction will encompass a plant capable of turning out 500,000 tons of ingot steel annually.

The project started in June 1958, and the first stage was scheduled to be completed by March 1962. But there have been long delays, and completion is now a year or more behind schedule. Privately, both the Brazilians and the six-company Japanese combine have been critical of each other.

The Japanese government is financing the project through the Japan Export-Import Bank. The Brazilians will repay their half of the joint company's equity over a 20-year period. But repayment problems may develop, too, for the Japanese are finding it more and more difficult to keep Japanese-Brazilian trade operating because of soaring Brazilian raw material costs.

Another non-reparations job is a steel box-girder type bridge in Phnomphenh, Cambodia. Tokyo Menka Kaisha, Ltd., one of the leading Japanese trading companies, received the $3.3 million contract from the Cambodia Public Works and Communications Ministry. Construction started early this year; completion is scheduled for January, 1963. The bridge, which will be about 2350 ft long and 43 ft wide, crosses the Tonle-Sap, a tributary of the Mekong River.

Japan's participation in the United Nations' Mekong River studies is a final addition to her list of overseas work. Japanese companies have three survey and design contracts for different elements of this work.

The critical factor in any speculation of how fast and how far the Japanese contractors and engineers can move abroad is government policy. And while the industry believes that a fundamental change in policy is coming, the new Ikeda government has not revealed a timetable.

The challenge for American and European firms is there, however; the only question is when it will appear.

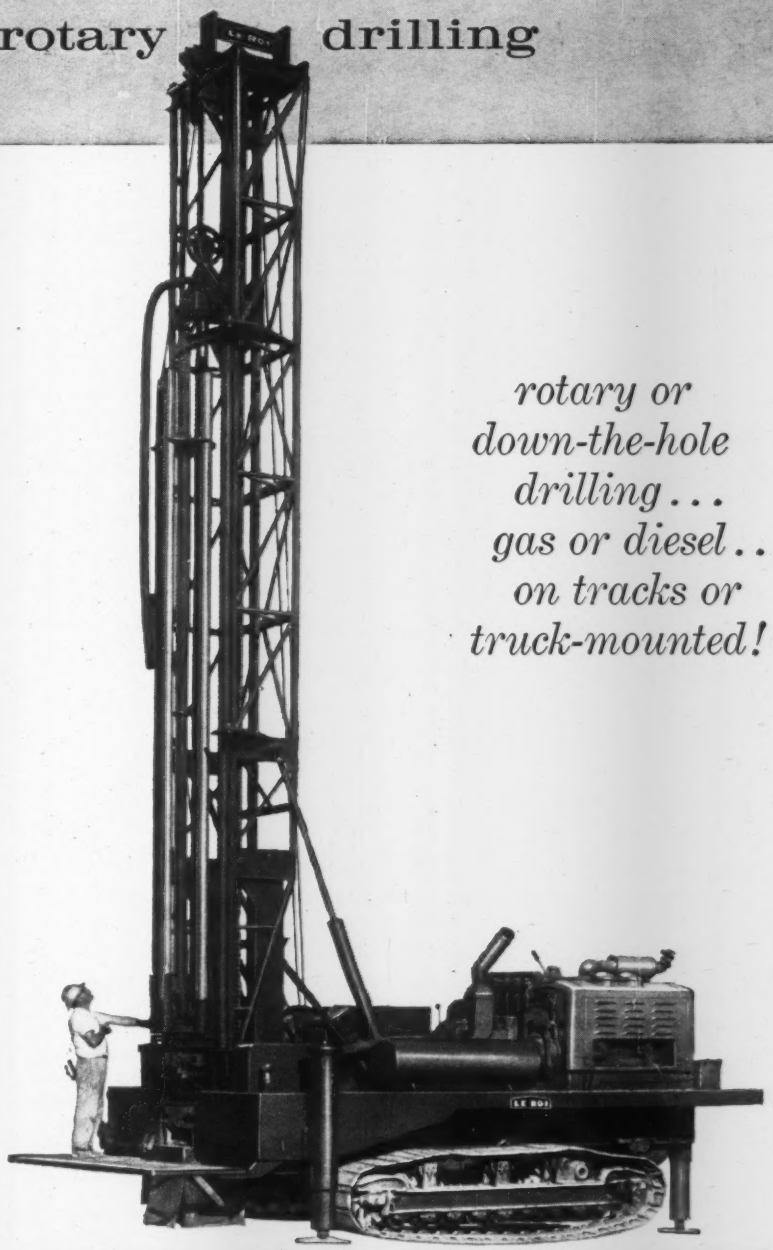
Music Center Features Advanced Sound Control

The latest techniques in sound control mark the Faculty of Music Building now under construction at the University of Toronto. Completion of the $3-million building is scheduled for this year.

The building will comprise a 110-ft tower section housing an opera stage and an adjoining three-tory structure housing a theater and a concert hall.

(Please turn the page)

LE ROI LRD-3 for powerful, deephole rotary drilling



rotary or down-the-hole drilling... gas or diesel... on tracks or truck-mounted!

Here's the *big* rig . . . completely self-contained for putting down hole as large as 7⅜ in. to 100 ft. depth!

The LRD-3 is available with either crawler or truck mounting. An enclosed cab can be furnished to provide all-weather protection for the operator while drilling. All controls are conveniently grouped for easy operation and good visibility.

The traveling head design of the LRD-3 provides positive mechanical power without excessive torque loss under heavy pulldown, and permits easy control in making up and breaking down drill pipe. Every function of the unit is designed to speed productive drilling and keep the operator making hole. Leveling, raising the mast, and even the automatic drill pipe magazine are hydraulically controlled for speedy operation. A powerful dust collector traps cuttings and blows them well away from the unit.

An extra-sturdy 4-speed chain-hydraulic pulldown puts up to 30,000 lbs. of pressure on the bit of the LRD-3. A rugged dual-range transmission provides rotary speeds from 9 to 168 rpm in a selection of 10 forward and 2 reverse speeds.

Where needed, the rotary bit can be quickly changed for a powerful down-the-hole drill. A Le Roi 100 hp dual-manifold air compressor provides plenty of 100 psi air for punching through tough rock with the down-the-hole drill, or it can be set to deliver 625 cfm of 40 psi air for fast, efficient removal of cuttings in rotary operation.

The LRD-3 comes complete with a hydraulically operated magazine with capacity for four 20 ft. drill pipes, and can be equipped with such optional equipment as lights for night-time operation, a mounted bit grinder, air hoist, breakout tongs, water injection system, etc. Specification Sheet AT-147 describes the unit in detail, with complete spec information. Send for a copy.

LE ROI

division of Westinghouse Air Brake Co. Sidney, Ohio

Every feature you've looked for is built into this newest Viber vibrator: brute power, high speed, one-man operation, easy maintenance. Hi-Viber consolidates the lowest slump concrete—with power to spare! It's easy to handle on narrow scaffolds, high forms or at hard-to-reach pour sites—as far as 200 feet from the generator. Simple motor design eliminates down-time and job failure. Just two moving parts—the rotor and the massive eccentric weight—turn on lifetime-lubricated sealed bearings. 1¾ or 2⅜-inch diameter vibrator heads have interchangeable rubber or steel tips. For complete details, call your Viber distributor or write the Viber Company, 726 South Flower Street, Burbank 14, California.

VIBER LINE: Concrete Vibrators, electric, pneumatic and gasoline engine powered • Hi-cycle, Motor-in-head vibrators • Small diameter internal vibrators (electric or gasoline) • Laboratory electric internal • Mass concrete vibrators (pneumatic) • External vibrators (electric and pneumatic) • Full depth concrete paving vibrators

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VIBER CO.

Viber Vibrators

Pioneers and leaders in the manufacture of vibrators

Floating floor slabs and movable double partitions, sound-insulated with a 3-in. thickness of glass fibers, will help the acoustical tile absorb sound energy and reduce sound vibrations. Practice room partitions are even designed to move slightly for increased sound absorption. A layer of glass-fiber material on top of the structural concrete slab will isolate the structure from vibration. The building frame is structural steel.

A moveable sound shell behind the orchestra platform will improve acoustics in the concert hall.

Architect is Gordon S. Adamson & Associaties; structural engineer is C. D. Carruthers & Wallace Consultants Ltd.; General contractor is Angus Robertson, Ltd. All are from Toronto.

Pravda Discloses Work On Huge Moscow Airport

Construction of a commercial airport in a suburb of Moscow, a terminal said to be one of the largest in the world, has been announced in Pravda, the Communist Party newspaper.

The airport, under way at Domodedovo, 25 miles south of Moscow, is scheduled to have a passenger handling capacity greater than the total capacities of the three air terminals now serving the Soviet capital.

Work on the project reportedly began last summer.

A 1,000-ft-long steel and concrete terminal will have two enclosed passenger walkways equipped with retractable boarding ramps so that passengers can walk between airliner and terminal without exposure to the weather. A 120-ft-high hangar will be able to house four of the largest Russian jet airliners simultaneously.

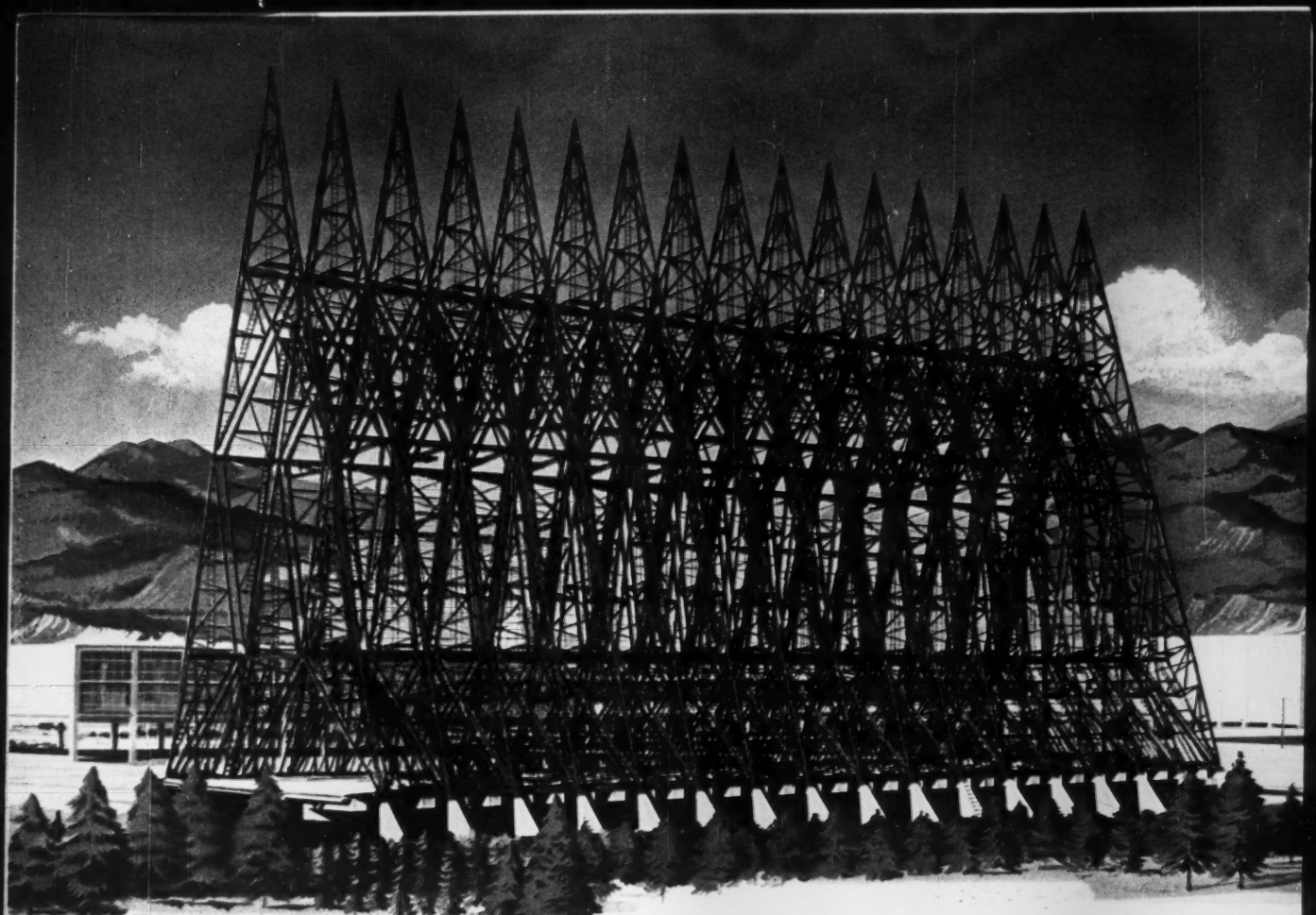
Monorail May Replace Van For London Airport Trip

Airlines are the latest group to show interest in monorail rapid transit systems.

The chairman of British European Airways and the deputy chairman of British Overseas Airways Corp. are considering a monorail link between London Airport and a terminal in central London.

Two monorail systems have been presented to the BEA and BOAC officials so far—one developed by the French Societe Lyonnaise des Eaux et de Leclairage, and one made by the Alweg Co. of West Germany.

A conventional rail system hasn't been ruled out. The central government will make the final decision on which system, if any, to use.



MVSS developed special equipment for guiding torches, special jigs for holding and turning 100 4½-ton tetrahedrons while mitering and welding the tubular steel at vertices of 7 components — at uncommon angles.

Architect —
Skidmore, Owings & Merrill
Chicago

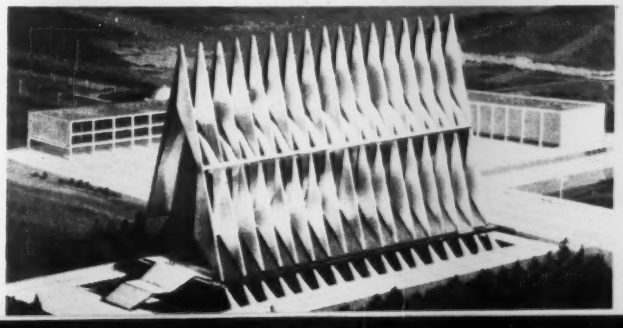
General Contractor —
Robert E. McKee
General Contractor, Inc.,
Santa Fe

SPAN-POWER*

U. S. AIR FORCE ACADEMY, COLORADO: Aesthetics and Engineered strength are combined in sloping "roof" and "walls" to give a structural design that echoes the individuality of surrounding Colorado Rocky Mountain Peaks. 100 tubular steel tetrahedrons rise sharply in varied planes from the floor of the new Air Force Academy chapel, to converge 150 feet above in 17 spiry peaks. 100 of these massif-like modules, each 75 feet long and weighing 4½-tons, were fabricated to exacting government specifications by MVSS in 20 weeks.

*MVSS **HAS IT** 1100 men and their manpower . . .
six completely equipped fabricating plants . . .
three erection companies . . . generate MVSS span-power.

Steel tetrahedrons surfaced with aluminum panels are the architectural essence of the chapel — which Air Force officials term "the commanding structure on the campus". Upon completion, 1500 cadets . . . Protestant, Catholic and Jewish, will worship within its three sanctuaries.



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*Viadon**

for permanently colored pavements that open up new horizons in design!

*Miradon**

for colored pavements requiring high resistance to fuels and oils!

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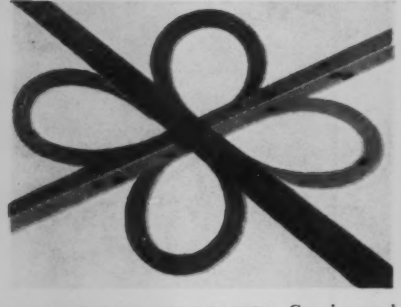
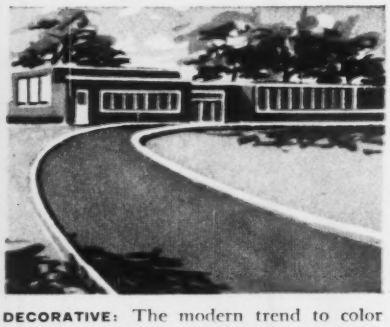


PROMOTES HIGHWAY SAFETY: Can be used to set off speed zones, stop streets, crosswalks, safety islands, and turn-offs at cloverleafs.

INCREASES PLANT EFFICIENCY: Makes light-colored, high-strength flooring; distinguishes danger zones, exits, assembly areas, etc.

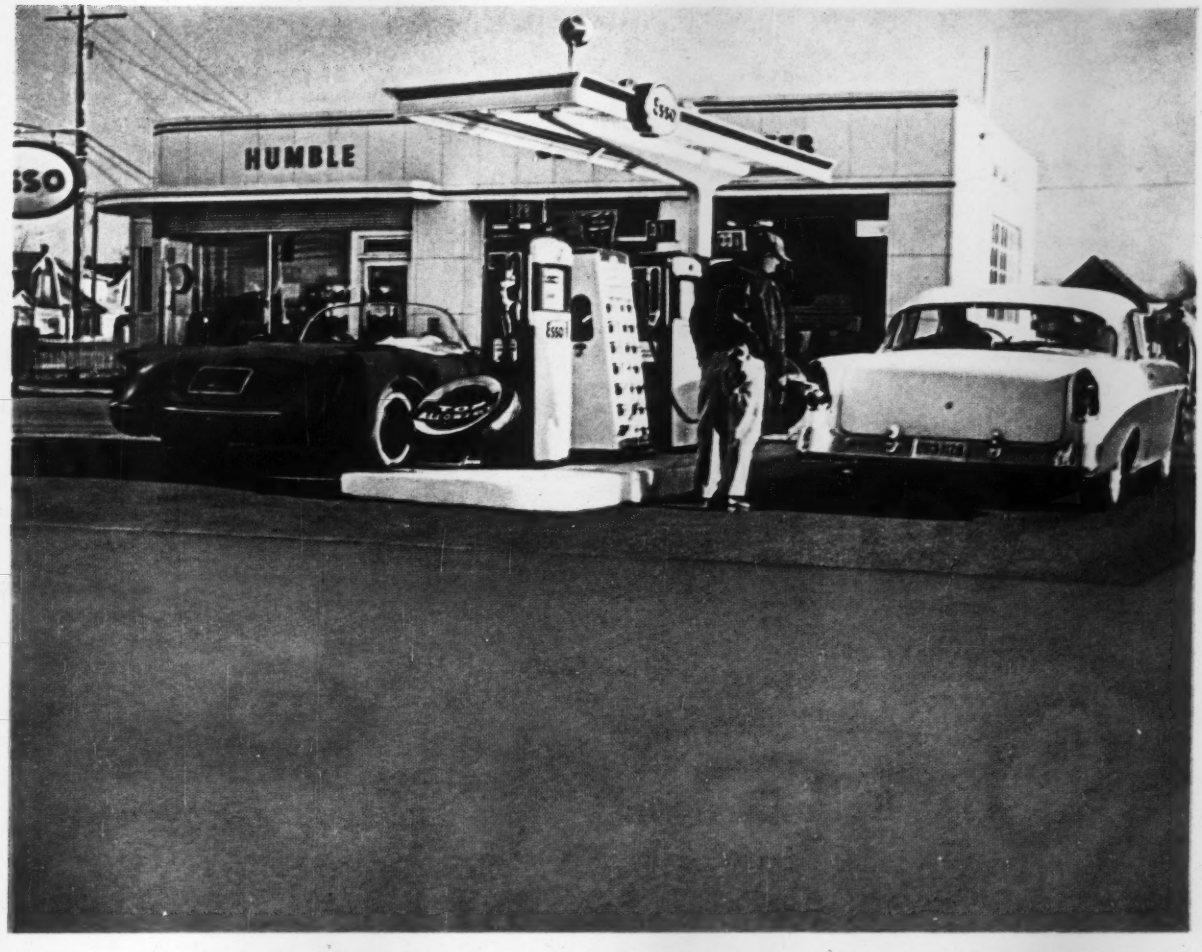


DECORATIVE: The modern trend to color creates a ready-made demand for driveways, carports, and patios paved in color.

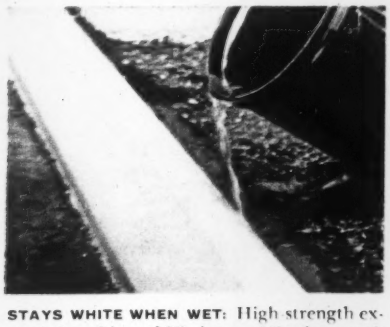
Today, color is everywhere – serving all kinds of decorative and functional purposes. Why not on pavement, too... permanent color mixed into the pavement to stay in as long as the pavement lasts? Esso Research now announces the answers: VIADON and MIRADON!

These remarkable new materials make colored pavement a practical reality. The color is built in. It cannot wear off. Either material can be mixed in a standard asphalt pugmill and both can be laid with existing construction equipment. Resulting surfaces are able to support heavy traffic on roads or runways.

Applications are almost limitless! Shopping centers, parking lots, driveways, playgrounds, tennis courts, patios, and pools can now be surfaced in pleasing



NOW! COLORED PAVING IN RED, GREEN, BLUE, YELLOW-GOLD AND WHITE!



STAYS WHITE WHEN WET: High strength extruded curbing of Viadon or Miradon won't turn gray in rain like other materials.

IDEAL FOR AIRPORTS: Unaffected by fuels and lubricants, Miradon colorfully identifies landing strips, aprons, and parking areas.

THERMOPLASTIC: Won't set permanently in transit; can be softened by heat if desired. No special storage facilities are needed.

colors to harmonize with their surroundings. For greater traffic safety, curbings, crosswalks, intersections, centerlines, etc., can be clearly and permanently indicated with Viadon or Miradon. For more information or technical assistance, write to us at 15 West 51st Street, New York 19, New York.

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New UNIT 1-YD. MACHINE

FAST, POWERFUL, BUILT-TO-LAST *for lowest cost yardage*

Here is the **new** MODEL 271-C, Unit's answer to your need for a 1-yd. machine that will do a better job of moving dirt, **yet be economical to own and maintain.** This new addition to the UNIT line retains many of the time-proved features that have won other UNITS world-wide fame for complete reliability and top performance. Add to these dependable features new advances exclusive to the UNIT 271-C, and you'll see why this machine can make more money for you.

The UNIT 271-C features a **new** compact swing circle gear assembly with upper works mounted on a large diameter, double live ring of steel balls running in hardened races. On the job, this means a friction-free, fast swing. With center pin mounting, hook and turntable rollers, and roller path eliminated, there's little lubrication required . . . practically no day-to-day maintenance.

The **new** 271-C also features a unique system that keeps hard working swingers extra cool, extending their life. Swingers run in a bath of oil which is kept cool by a set of copper coils connected directly to the radiator cooling system. Thermostatic control holds temperature below the point where clutch lining life is normally affected by heat.

There is a lot more to tell about these and other UNIT advantages on this, the newest entry into the 1-yd. field. Let your local Unit distributor give you the complete 271-C story.

UNIT

UNIT CRANE & SHOVEL CORP.
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The Model 271-C

FEATURING

DOUBLE BALL BEARING SWING CIRCLE

Friction-free swing, higher load capacity, sharply reduced maintenance time.

OIL-COOLED SWING CLUTCHES

Here's the ultimate in dissipation of harmful heat!

EXCLUSIVE ONE-PIECE MAIN MACHINERY CASE

All gears, shafts, and bearings completely enclosed in a constant oil bath.

EXCLUSIVE AUTOMATIC TRACTION BRAKES

Trigger-fast braking provided in either direction of travel **without manual control.**

STRAIGHT-IN-LINE ENGINE MOUNTING

Longer life, better performance, and increased efficiency because all working parts are perfectly aligned . . . power flows directly to main machinery.

NEW FULL VISION CAB

Operator can see in ALL directions at all times. Promotes safety, increases efficiency.

DISC-TYPE CLUTCHES

Provide uniform pressure without grabbing or chattering . . . easily adjusted.

WORM-DRIVEN POWER TAKE-OFF

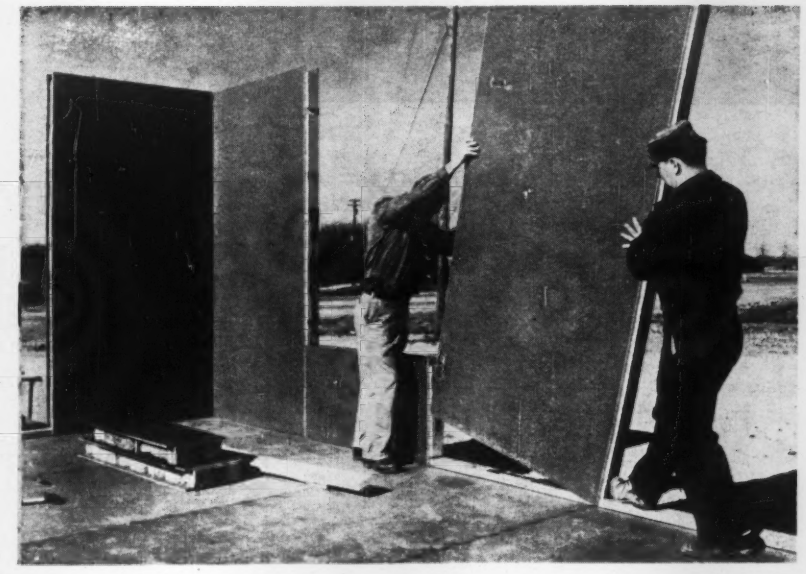
Provides "one step" speed reduction between power unit and transmission shaft . . . eliminates many wearing parts . . . minimizes friction losses.

FULL CONVERTIBILITY

Shovel, dragline, trenchoe, clamshell, liftcrane, and magnet crane front ends available.

INVOLUTE-SPLINED SHAFTS

Shafts in upper works and crawlers are involute-splined for greatest strength. Wear is reduced . . . replacement is seldom necessary.



Stressed-Skin Prefab Walls

The Flex-Ponent System of factory-assembled wall panels achieves strength and stiffness with conventional studs and spacers, plus load-bearing braced facings (stressed-skin effect).

Panels are manufactured in standard widths, 8 ft high, but can be cut and fit with ordinary carpenter tools for nonstandard applications. Exterior wall units are load bearing and rock-wool insulated.

Interior wall panels are uninsulated, and available in load-bearing or non load-bearing units.

The system includes door and window headers and corner posts and is compatible with standard door and window frames, as well as floor baseboards and ceiling moldings.

According to the manufacturer, the system meets FHA and city code requirements for column loading, racking strength and transverse strength of headers. And because field assembly requires only that units be fastened with conventional nails or staples, and interior joints filled with an epoxy adhesive and finished with spackling compound, a structure can be enclosed quickly.

Facing is pressed wood. All exterior panels are faced with sheets tempered on both sides; interior panels with sheets untempered on both sides.

Exterior walls can be finished with boards and battens, shingles, or masonry. And interior walls are ready to receive paint or wallpaper after joints have been treated. JOHNS-MANVILLE, 22 E. 40 St., NEW YORK 16, N. Y.

Pump Control Does Two Jobs

A new automatic pump control and liquid level indicator called "VIS-A-TROL" is designed for use with submersible sewage and sump pumps, vertical type sewage and sump pumps and septic tank effluent pumps.

The automatic control system is combined with a device showing the depth of liquid in the pit. Pumping rate is indicated on the instrument along with level changes in the sump, thus the rate can be compared to inflow without looking into the wet pit.

The equipment can be installed inside buildings or in weatherproof outside enclosures up to 300 ft from the pumping pit. There are no electrical control connections between the wet pit and the control panel. The panel and instrument are a factory-wired unit including starters, alternator and high-water alarms. Each unit is manufactured to requirements of the particular job and supplies an efficient remote control system. Details are offered by the manufacturer in a four-page bulletin, AC-100. WEIL PUMP CO., 1530 No. FREMONT ST., CHICAGO 22, ILL.

(New Products continued p. 51)

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IGLOO puts Drinking water exactly where you want it

. . . and WHEN you want it. IGLOO portable water coolers speed up the work and help employee relations, too. Station an IGLOO for every 6 to 8 men and see the results immediately. Select from 23 sizes and models—one will fit your exact needs. Remember, IGLOO has been time-tested and proved on thousands of tough jobs over the world.

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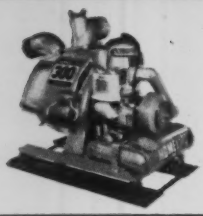
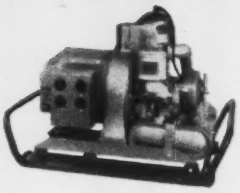
Choose from a complete line of:
HOMELITE CARRYABLE EQUIPMENT

HOMELITE 2 CYCLE ENGINE DRIVEN CARRYABLE PUMPS



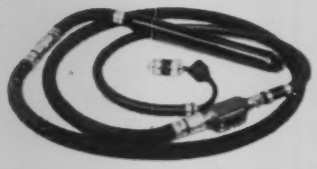
Size	Capacity	Wt. in lbs.	Model
	CENTRIFUGAL PUMPS		
1½"	5,500 g.p.h.	45	20S1½
2"	10,000 g.p.h.	69	35S2-1
2"	10,000 g.p.h. (slow speed)	69	35S2-1R
3"	18,000 g.p.h. (slow speed)	103	8S3-1
3"	18,000 g.p.h.	103	8S3-1R
3"	102 g.p.m. at 60 p.s.i. 250 g.p.m. — open discharge	103	8S3-1P
	DIAPHRAGM PUMP		
3"	5,000 g.p.h.	120	20DP3

HOMELITE 2 CYCLE ENGINE DRIVEN CARRYABLE GENERATORS



Capacity (Watts)	Current	Wt. in lbs.	Model
1,500	115 volt, 60 cycle, AC	90	35A115
3,000	115 volt, 60 cycle, AC	140	8A115
3,000	115/230 volt, 60 cycle, AC	141	8A115/230
3,000	230 volt, 180 cycle, 3-phase AC plus 110 volt DC	143	8HY

4 Cycle Engine Driven Pumps and Generators also available



HOMELITE ONE-MAN CONCRETE VIBRATORS

Type	Head Dia.	Motor	Wt. (Complete)	Model
Motor-in-head	2.3"	High-Cycle*	47 lbs.	VH-LD
Motor-in-head	2½"	High-Cycle*	41 lbs.	VH-10
Motor-in-head	4"	High-Cycle*	58 lbs.	VH-HD
Motor-in-head	2¾"	110 v. AC-DC	42	VU-MH
Flexible Shaft	1 1/16", 1¼", 1⅜"	110 v. AC-DC	41	MU-FS

HOMELITE CHAIN SAWS

QUICK SELECTOR GUIDE FOR EVERY CUTTING NEED

Model	Wt. in lbs. (Engine Only)	Type of Drive	Tree Sizes Model Will Cut (Dia.)	Straight Blade Bar Lengths
500	19	Direct	Up to 3'	12" to 21"
600D	18	Direct	Up to 4'	12" to 30"
ZIP	20	Direct	Up to 3'	12" to 21"
WIZ	20	Gear	Up to 5'	14" to 28"
700D	19	Direct	Up to 5'	12" to 30"
700G	21	Gear	Up to 7'	15" to 60"
900D	23	Direct	Up to 7'	17" to 44"
900G	26	Gear	Up to 10'	18" to 60"

ELECTRIC TOOLS

BUILDER'S HAMMERS

Weight	Capacity (Drill Sizes)	Motor	Model
13 lbs.	¼" to 1⅛"	115 volt AC-DC	BH-13-U
21 lbs.	½" to 2⅜"	115 volt AC-DC	BH-21-U
20 lbs.	½" to 2⅜"	High-Cycle*	BH-HC

PAVING BREAKER

Does all jobs that a 55-60 lb. air hammer will do. High-cycle motor. Weight: 60 lbs.

ROCK DRILL

Drills holes up to 3" in diameter, up to 20' deep. High-cycle motor. Weight: 55 lbs.

A complete line of accessories and tools are available from Homelite for the above builder's hammers, paving breakers, and rock drill.

*180 cycle, 230 volt, 3-phase AC power for high-cycle tools is supplied by carryable Homelite generator, Model 8HY.

HOMELITE

A DIVISION OF TEXTRON INC.
1105 RIVERDALE AVE., PORT CHESTER, NEW YORK
WRITE FOR FREE FULL LINE CATALOG
IN CANADA: TERRY MACHINERY CO., LTD.

New Product Briefs

• **Block buster**—Bench moldel tests cement blocks, beams and other samples. Operator can obtain one of three load ranges, 24,000 lb, 12,000 lb or 600 lb. Testing speeds of up to 3 in. per min. can be controlled by a micrometer needle valve. Compression opening is 11 in.; stroke is 3 in. Tinius Olsen Testing Machine Co., Easton Rd., Willow Grove, Pa.

• **Hydrostatic transmissions**—Dynapower hydrostatic transmissions for mobile construction equipment. Dynapower unit consists of any combination of a fixed or variable displacement axial piston hydraulic pump, directly connected to an engine, and a similar fixed or variable displacement hydraulic motor connected to a differential. Replaces conventional clutches, drive shafts, universals. The New York Air Brake Co., Starbuck Avenue, Watertown, N. Y.

• **Slide fastener**—The Superlock allows easier and faster erection of scaffolds, according to the manufacturer. The fastener has a foot release that allows an erector to take off the top brace by hand and remove the lower brace with the sole of the shoe. Superior Scaffold Co., 5624 Bankfield Ave., Culver City, Calif.

• **Air hose**—Maximair hose combines toughness with flexibility according to its manufacturer. The hose, made in 25-, 50- and 75-ft lengths and in diameters up to 2 in. is of doubled braided rayon and neoprene construction. In some sizes it is credited with being able to sustain up to 400 psi. Dayton Industrial Products Co., 2001 Janice Ave., Melrose Park, Ill.

• **Submersible pump**—The Bibo 3 in. electric pump weighs 88 lb and can pump up to 20,000 gph with a head of up to 105 ft. According to the manufacturer, efficiency of the Bibo 3 in. pump is better than 60%. Flygt Corp., Hoosick Falls, N. Y.

• **Coating system**—Farbo-Tile. One-to-one ratio of base to curing agent, with combined epoxy and urethane resin formulations. Available in easy-to-mix 2-gal kits. Farboil Co., 801 Key Highway, Baltimore 30, Md.

• **Redwood finishing system**—Polyurethane stain finish and clear gloss top coating, with built-in ultra-violet filter. Weatherproofed and moisture proofed for exterior and interior wood surfaces. Sapolin Paints Inc., 205 E. 42nd St., New York 17, N. Y.

• **Crawler tractor**—The 201 series of the TD-20 tractor—second largest of International Harvester's crawlers—has a turbo-charged diesel engine that develops 140 engine hp at 1,550 rpm. The machine has a six speed, full reverse transmission and boasts a 113 drawbar horsepower. International Harvester Co., 180 North Michigan Ave., Chicago 1, Ill.

• **Plowing disc**—Ferguson heavy duty Plowing Discs are manufactured with discs 28 in., 30 in., and 32 in. in diameter. Weight ranges of the plows are from 10,500 to 12,500 lb. A hinged model can be opened and closed from the drivers seat and a rigid model can be equipped with rubber tires for pavement crossing. Shovel Supply Co., Inc., Dallas, Tex.

• **Wall sheathings**—Firm-Grip, a sidewall material ½ in. thick made of wood fibers bonded with special bituminous compounds. Rigid-Frame, an asphalt-impregnated and coated insulating material. Keasbey & Mattison Co., Building Products Div., Ambler, Pa.

• **Masonary blade**—The MR 824 is designed for cutting lightweight block, dry press refractories and other soft stone. Layers of flexible glass cloth woven into the blade give added strength. Clipper Mfg. Co., 2800 Warwick Suite, 144, Kansas City, Mo.

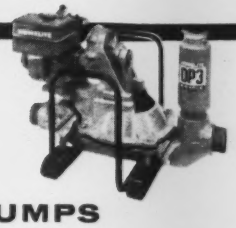
• **Asbestos-cement siding** — Simulated wood grains in random-pattern rectangles. Five colors, baked-on acrylic finishes. Available in standard 12x24-in. panels with a nominal thickness of 0.170 in. Keasbey & Mattison Co., Ambler, Pa.

• **Drawing board cover**—Borco. Extra-resilient, durable vinyl plastic with non-glare finish. Attached to surface by adhesive tape. Unitech Corp., 50 Colfax Ave., Clifton, N. J.

• **Sliding door hardware**—Grant 8032. Adjustable apron carriers with nylon wheels and adjustable nylon floor guide. Available in four track lengths from 4 to 8 ft. Grant Pulley & Hardware Corp., High St., West Nyack, N. Y.

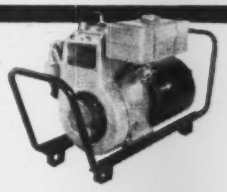
• **C-clamp**—Made of solid beryllium copper, eliminating special coatings and protective shields. Available with vee spindles in 2-, 4- and 6-in. standard frame sizes, and 4x4-in. and 6x6-in. Deep-Throat sizes. United Associates, 1605 N. Hercules, Clearwater, Fla.

HOMELITE
4-CYCLE
ENGINE-DRIVEN
PUMPS AND GENERATORS



PUMPS

Size	Capacity	Wt.	Model
1½	7000	55	43S1½
2	9000	58	44S2
3	18000	95	45S3
3	4500	118	44DP3 (Diaphragm)



GENERATORS

Watts	Current	Wt.	Model
1500	115 Volt AC	104	46A115
3000	115 Volt AC	170	41A115
3000	115/230 Volts AC	170	41A115/230
5000 (Int.) 4500 (Cont.)	115/230 Volts AC	250	42A115/230

Homelite Floodlights make night work easier and more efficient by flooding work area with brilliant lighting. Rugged cast-aluminum housings assure long service life. Quick release cable connectors make set up and break down easy — no tangled cables. Standard sealed-beam 300 or 500 watt floodlights or spotlights are used — no bulb replacement problems.

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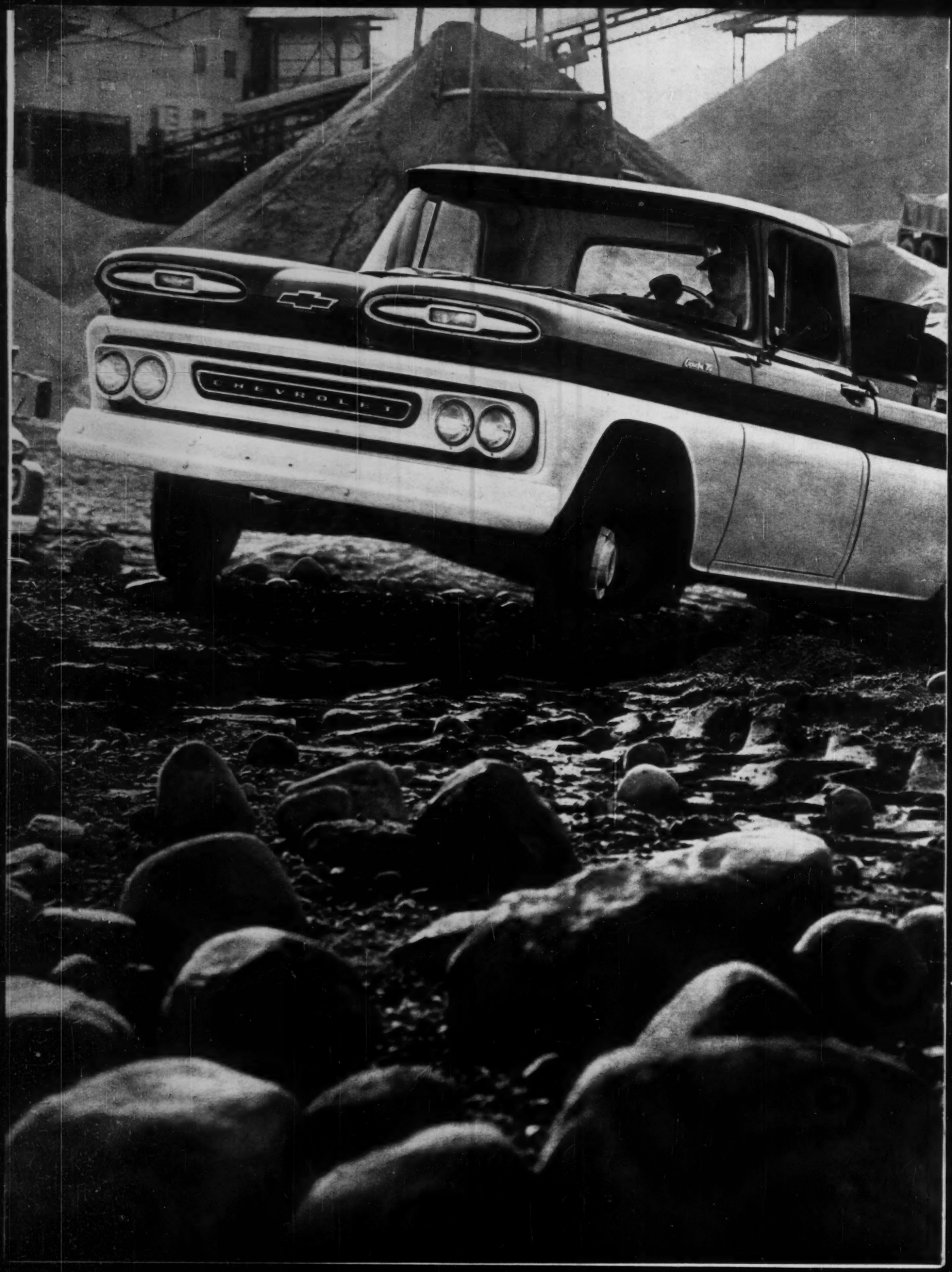
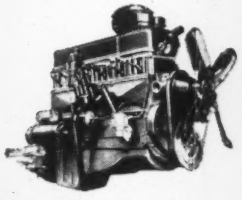

CHEVROLET

HERE'S WHY IT'S A GOOD IDEA TO GET A CHEVY PICKUP:

Because Chevy's wide choice of models (there are 15 of 'em!) means you'll get the *right* pickup . . . because each is engineered to the highest standards . . . because Chevy's rugged, smooth-riding build lasts longer, costs you less to own and keeps your profits at peak levels. Chances are, whatever you consider most important, you'll find Chevrolet has thought of it first, and done most about it. Whether you get a handsome Fleetside or handy Stepside model (or possibly a Corvair 95 Rampside or Loadside or one of a half-dozen four-wheel-drives) you'll soon be convinced that buying a Chevy pickup was the best idea you ever had!

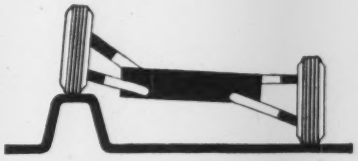


ECONOMY

The Chevrolet slant on economy makes the most sense of all, with the tight-fisted 235-cubic-inch Thriftmaster 6 (standard) leading the way. It's the most experienced money-saver going, one that's powered more payloads than any other engine in the business. It's famous for its stingy way with a gallon of gas and also for its rock-ribbed durability. It keeps your Chevy at work, making money, instead of in the repair shop, costing. And if you prefer the extra snap of V8 power, there's the eager, efficient Trademaster V8, 160-horsepower strong and available at nominal extra cost in all conventional pickup models.

CAPACITY

Chevy pickup bodies—6½, 8 or 9 feet long—are tops in cargo capacity and convenience, with a long list of bonus-built features to keep them working better and looking their best from delivery to trade-in. Both Fleetside and Stepside models feature select wood floors for better footing and quieter going, with steel skid strips to ease loading and unloading. Extra strong grain-tight tailgates with anti-rattle latches and support chains minimize bulk cargo leakage and offer firm support for extra-long loads. Fleetside body sidewalls are double-walled in the lower section, for extra rigidity and protection of exterior surfaces against dents caused by shifting cargo.



PROFIT-★★★★★-PROTECTING RIDE

All of Chevrolet's 2-wheel-drive pickups feature years-ahead Independent Front Suspension design, with ride, roadability and ruggedness that are paying off for truckers everywhere. The reduction in driving effort and fatigue that makes a bigger day's work come easy is just one part of the three-way Chevy payoff. The same shock-cushioning action protects your cargo against damage en route, and also protects the truck itself against the bumps that can batter the life out of cab, body and chassis components. Sounds too good? . . . sample it for yourself at your Chevy dealer's, soon! . . . Chevrolet Division of General Motors, Detroit 2, Mich.

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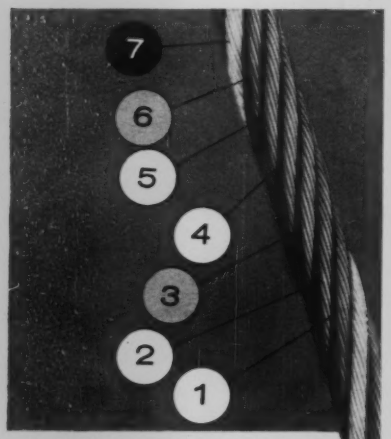

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. . . New Product Briefs

• **Form release agent**—Form Compound C permits painting of concrete surfaces without special preparation and is said to be a positive bond breaker that neither reacts chemically with concrete nor interferes with proper cure. Shell Oil Co. of Canada, Ltd., 1027 8th Ave. SW, Calgary, Alberta.

• **Reinforcing angles**—Teco. 16-ga galvanized sheet steel. For wood to wood connections. Available in 3-, 5-, 7- and 8-in. lengths. Timber Engineering Co., 1319 Eighteenth St., N.W., Washington 6, D.C.

• **Cooling Units** – Packaged cooling units in the 25 to 150 ton capacity range have all component parts except the gasoline engine made and guaranteed by the same manufacturer. Units include gas driven compressors, condensers and liquid coolers. Bell and Gossett, Morton Grove, Ill.

• **Light diffuser**—The White Cloud is a fluorescent luminaire with a one piece white polystyrene diffuser. Sides, ends and face are completely luminous. Solar Light Manufacturing Co., 400 North Ashland Ave., Chicago, Ill.

• **Coating prevents condensation**—Coating that dries to a hard off-white film is said to prevent condensation by a two-way action—surface insulation and absorption of small amounts of moisture, followed by later release as the humidity drops. Called Seculate, it can be applied to metal or building materials by brushing or spraying. Chemical Concentrates, Fort Washington, Pa.

• **Scaffold-truss**—Jacks can be placed anywhere along I-beam top of Adjustomatic's trussed scaffold to support formwork. Automatic Devices, Inc., 2400 Adie Road, Maryland Heights, Missouri.

• **Aluminum coating**—Perma Cote 61 is said to protect aluminum and other non-ferrous metals against acids, alkali and outdoor exposure. According to the maker, one coat of the product withstands the effects of wet mortar for 30 days at 100 deg. Service Products Div., Johnson's Wax, Racine, Wis.

• **Steel door frames** – Wrap-around frames of 16 and 14-gage steel. Available in 6¾-in. and 8¾-in. depths and 6-ft. 8-in. and 8-ft heights. Eliminates need for custom-made door frames in masonry construction. Amweld Building Products, Niles, Ohio.

• **Foamed-plastic panel**—Nu-Way rigid-insulation panel, made of expanded and fused polystyrene beads, is resistant to water vapor transmission and water absorption. Available in thicknesses from 2 to 8 in., the panels have a moisture absorption of less than 2% after periods of complete immersion. Water-vapor transmission rate is 7.9 grams per sq m in 24 hours. Compressive strength is 16 to 20 psi. United Progress, Inc., P. O. Box e131, Albany, N. Y.

• **Combination road machine**—A single-pass machine that spreads, finishes and floats requires only one operator and one power plant. Its telescopic frame can be set for paving widths from 20 to 26 ft, but the machine can be transported on its own pneumatic undercarriage in two sections both less than 8 ft in width. Chain Belt Co., Milwaukee 1, Wisconsin.

• **Floor enamel**—Vyn-L-Floor dries in 20 minutes and may be walked on in an hour, according to the manufacturer. Other advantages claimed for the new enamel: cleans up with water, can be applied in damp weather, and requires no waxing. Adelphi Paint and Color Works, Inc., 86-00 Dumont Ave., Ozone Park, N. Y.

• **Asphalt plant**—Wylie 3140 Roadmaster, an automatic asphalt plant with a capacity of 30 to 40 tph of hot mix and up to 50 tph of cold mix. Direct charging of aggregate from material hopper to dryer eliminates need for cold material elevator. Plant includes a rotary dryer, twin shaft pugmill, batching hopper, hot elevator, dust collector, power plant, heating and metering systems. Wylie Mfg. Co., P.O. Box 7086, Oklahoma City, Okla.

• **Springless hinge**—Two sections of the double-action hinge bear against each other in a spiral cut around the hinge pin. Opening a door hung on this hinge makes the door ride up ½ in., and the door's weight reverses the action automatically in closing. Becker Spir-A-Lift Hinge Co., Inc., 10071¼ N. Rowland Ave., El Monte, Calif.

• **Plastic storm window frames**—Frames for storm windows that are made of rigid extruded vinyl called Koroseal will not rust, pit, or react to acids and chemicals normally encountered. The plastic frames are also claimed to give better insulation than wood or metal frames and to eliminate the condensation and freezing of moisture that occurs on metal window sashes. B. F. Goodrich, Akron, Ohio.

Colorado Department of Highways Colfax-Federal Interchange, Denver, Colorado. A 4-span, continuous "T" girder structure with two roadways 44 ft in width, separated by a 4 ft raised median.

Designers: Ken R. White, Consulting Engineers, Inc., Denver, Colorado
T. V. Stradley, Head of Bridge Section

Contractor: Latimer Construction Company, Denver, Colorado

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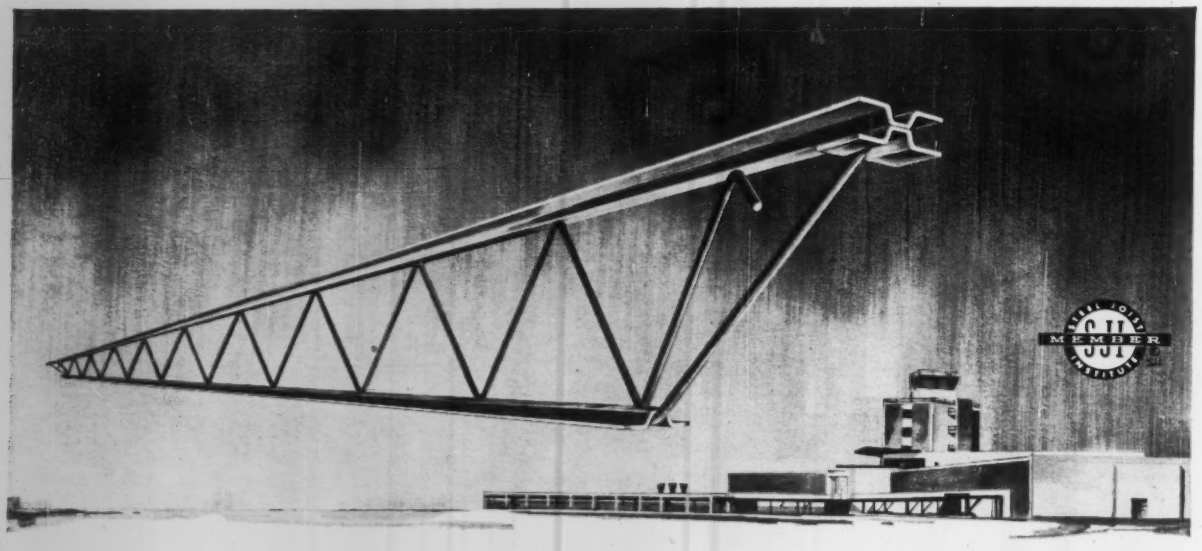

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The other is a booklet of new loading table sheets on the LS-series. It includes all the data you need on the new sizes, up to 144 foot span.

Write Sheffield Division, Armco Steel Corporation, Sheffield Station, Kansas City 25, Missouri.

ARMCO Sheffield Division

Ray Giffels, head of the country's busiest A-E firm has Cobo Hall behind him and sees ahead . . .

A Better Year for Industrial A-Es

The president of the world's largest architectural-engineering firm sees the end of construction's profit squeeze this year. "It's got to change," says Ray Giffels, of Giffels & Rossetti, Detroit. "Industrial construction has been in the doldrums for three years now, but it has got to change, if only through obsolescence and population growth. And it might as well start this year."

His optimism, which he infuses throughout his whole firm, gives him eyes to see a better year ahead than last —and last year his company designed $200 million worth of construction put in place.

He sees heavy processing industries leading the upturn in construction. Metalworking plants, foundries, woodworking plants, nuclear installations and food processing plants made up 18% of G&R's business last year. This year, Mr. Giffels predicts, that category will show up as 25% of the business. G&R has four foundries on the boards right now plus a $6.5-million plant for Armour & Co.

"These companies have not been using the money they've been budgeting for expansion," says Merrill Bush, G&R's vice president and director of development. "This year they will start spending it." Echoing his boss' buoyant attitude, he predicts: "If one-third of the jobs that I am closing break soon, we will have to double our payroll."

Ray Giffels lays G&R's success to the company's policy of concentrating on architecture and engineering to the exclusion of sociology and city planning. "We believe the client is competent enough in his own business to know where to build his plant," he explains. "We look at the physical plant site—not at the social or sociological consequences of putting a plant on it." His company's library is large enough to require a full time librarian, but there is not a sociology title in it.

"Giffels & Rossetti is also opposed to the principle of package jobs," he continues. "The function of an A-E firm is to represent the owner and to see that construction meets the requirements of design. If we are doing the building we are trying to make money on that phase as well, thus a conflict of interest develops. It is a principle we oppose."

Most of the others in the company see Ray Giffels, himself, as the key to the firm's strong position. It was Mr. Giffels who stepped into the presidency in 1957 during a time of trouble for the firm. A trusted employee was accused of embezzling over $800,000. Victor Vallet had resigned as president after an audit showed that he had taken "salary and bonuses" amounting to $3 million. And on top of it all, industrial construction across the country was curving into a slump. (G&R's atomic energy work had all but vanished after a 1955 high of nearly $400 million.)

Mr. Giffels set about reorganizing the company. Operations that were scattered throughout Detroit were consolidated into the 10-story Marquette Building, which is just a block away from the G&R-designed, $54-million Cobo Hall, Detroit's dramatic new convention site. He breathed optimism into the selling effort and esprit de corps into the staff. The staff—including the Canadian subsidiary—now numbers 700 and is growing. Canadian projects are handled by Giffels & Vallet of Canada, Ltd., which was formed in 1950. It employs 240 men, making it, G&R claims, the largest A-E company in Canada.

Giffels & Rossetti's largest job, incidentally, was Canadian—the $175-million Mid-Canada radar line. Second largest was the Inco Nickel townsite development in Manitoba. G&R's portion of that project amounted to $120 million. Other Canadian clients are Parke-Davis, Ford Motor Co., Westinghouse Electric Co., Dow Chemical Co., Wyandotte Chemical Co. and Chrysler Corp.

Designing for general industries in the U. S. will account for nearly 30% of G&R's volume this year. A $17-million Mack Truck plant is under construction at Hagerstown, Md. Two Owens-Illinois glass plants totaling $20 million are in the design stage, and G&R is currently working for Kendall

(Please turn the page)

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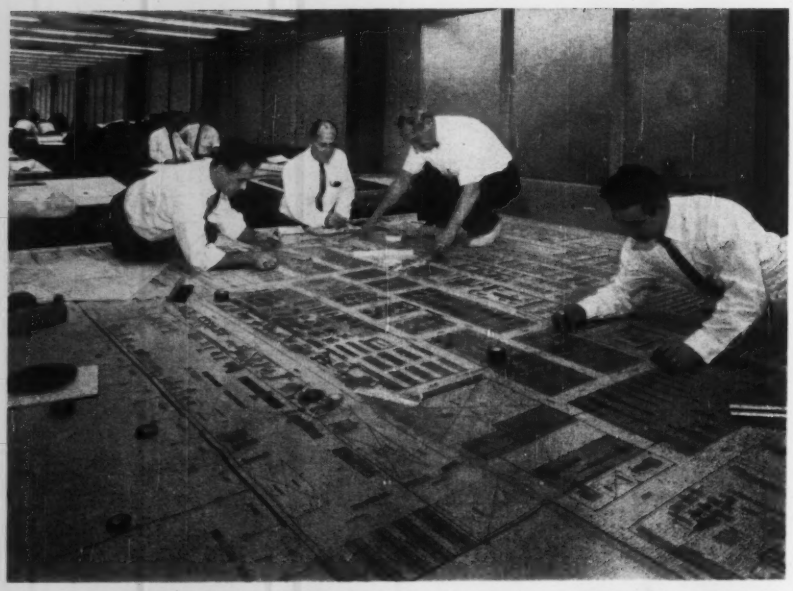

GIFFELS & ROSSETTI'S ENGINEERS detailing floor layout for $17-million Mack Truck plant being built in Maryland.

Co., Kellogg Co., Trans-Canada Airlines and others.

The remaining 45% of G&R's domestic work will be divided about equally between military jobs and institutional and commercial projects.

From its beginnings in 1925, when the firm consisted of just Ray Giffels and Victor Vallet, it grew rapidly with the auto industry to 200 strong. When the depression closed the auto plants, the firm was reduced to three men (Paris-born architect, Louis Rossetti joined in 1928.)

The tough 30s taught Mr. Giffels the peril of linking the company's future to a single industry. "But we learned a lot from the auto industry," he says. "They demanded fast action because it was often necessary to design and build facilities between model changes. Detroit gained a reputation for getting things done in a hurry.

"Mack Truck came to Detroit for the design of their Maryland plant because there is no other place that could do the job so fast. Remember that during the war more defense plants were designed in Detroit than any other three cities put together."

Ray Giffels figures Detroit will go on getting its share of A-E work.

Briefs . . .

Retirements . . .

Rear Admiral Horace B. Jones has retired after 38 years in the Navy, most of it in the Civil Engineering Corps. He has been assigned to special projects at the Bureau of Yards and Docks. Before his last assignment, he was District Public Works Officer and District Civil Engineer for the Fifth Naval District.

Jack A. Gardner, chief of the special studies section of the Missouri River Division of the Army Corps of Engineers, has retired after 32 years service. Before 1959, he was chief of the planning and reports branch of the Omaha District office.

David L. Costello, District II State Aid Engineer for the Massachusetts Department of Public Works, has retired after 40 years service with the Department.

W. L. Newmeyer, Bureau of Reclamation Electrical Engineer, has retired. In his 27 years of service, he participated in the design of some of the Bureau's largest hydroelectric projects, including the power development of Hoover, Grand Coulee and Shasta Dams.

Harold V. Schmidt, who directed Western Electric Company's $370-million nation-wide construction program over the last nine years, has retired as vice president, plant design and construction. His successor, **J. Lloyd Williams**, has been named manager, plant design and construction organization.

John R. Sargent has retired as regional planning and research engineer for the Bureau of Public Roads at Portland, Ore. Except for special assignments for the War Department during World War II, he had been with the Bureau for 38 years.

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High density overlaid plywood was used by the Washington State Highway Department to cast ninety-foot, pre-stressed concrete beams for a bridge in western Washington. Forms were vibrated 3,000 to 6,000 rpm, and stripped in 24 hours. Results? Strong, smooth concrete beams at lower form-cost. And with forms in good condition, ready to be used again or cut to any size required for the next job.

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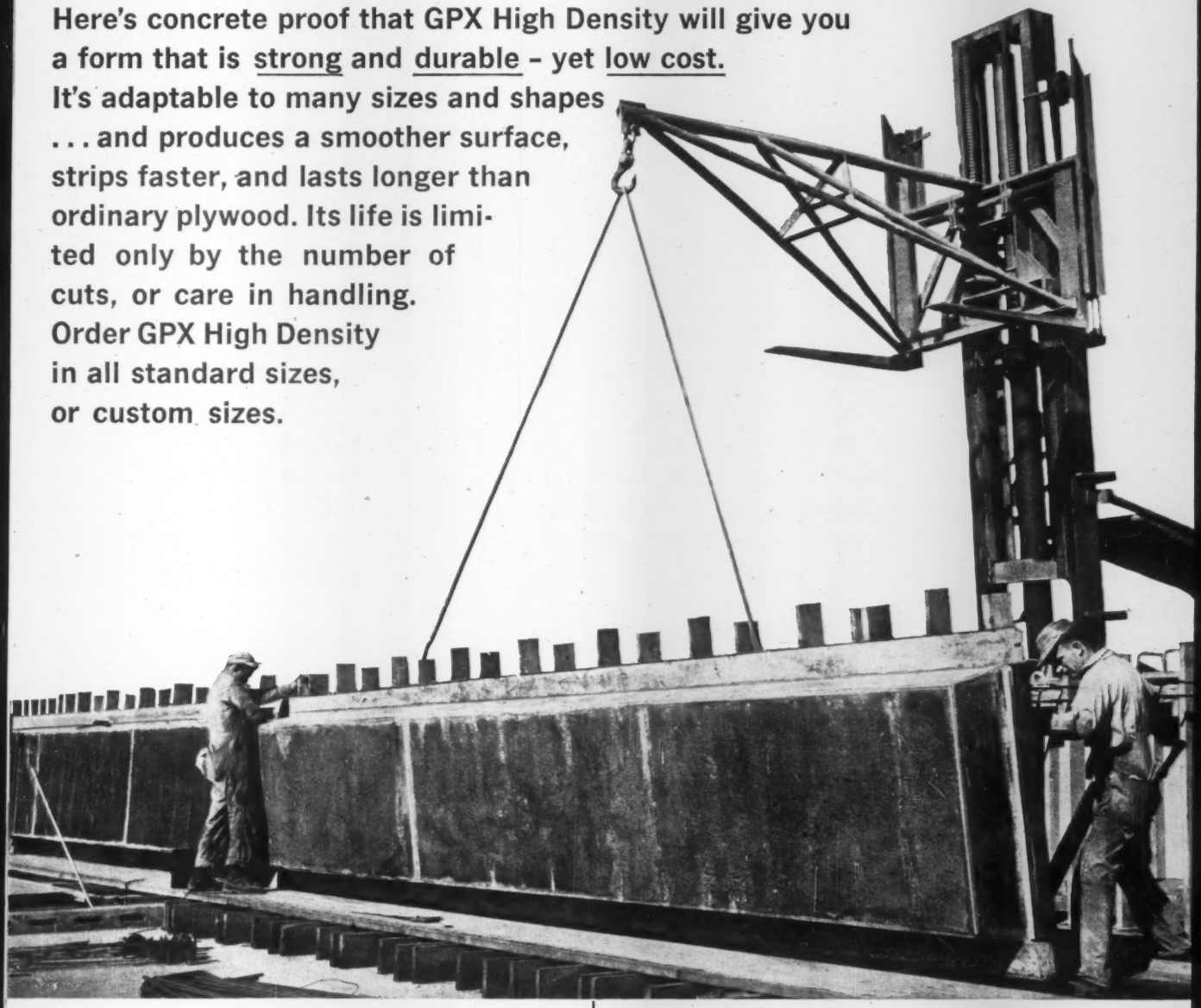

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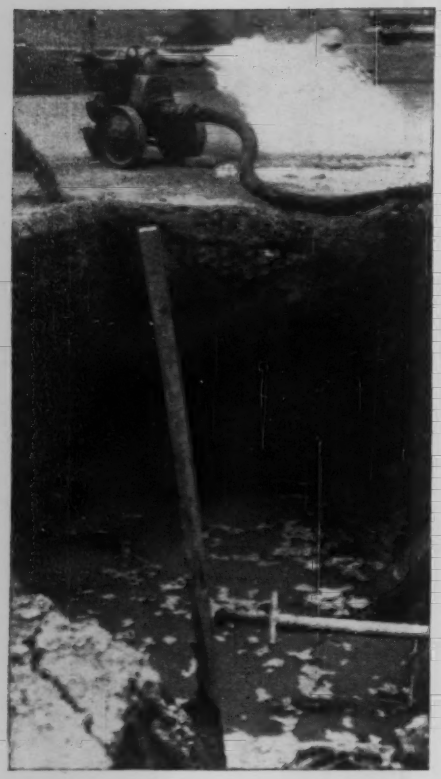

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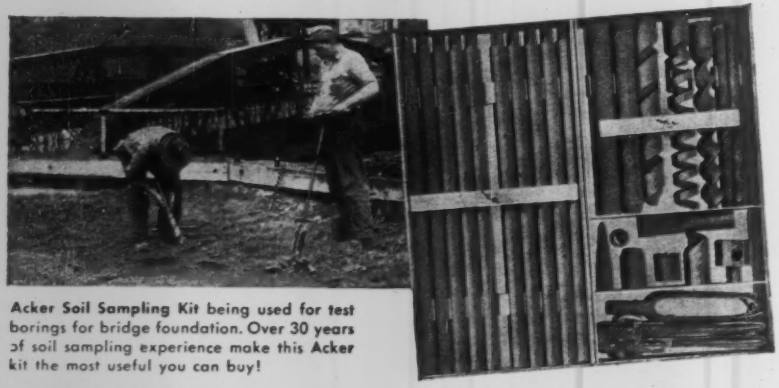
With accurate sub-soil information, *you avoid* costly trouble later on. And, what better way to get this information than with a portable, easy to use Acker Soil Sampling Kit. For here is a versatile collection of twelve soil sampling tools packed in a handy steel kit that can be carried in any car.
Write today for prices and Bulletin **26ENR.**



Acker Soil Sampling Kit being used for test borings for bridge foundation. Over 30 years of soil sampling experience make this Acker kit the most useful you can buy!

ACKER DRILL CO., Inc. 725 W. Lackawanna Avenue Scranton, Penna.
a complete line of Diamond and Shot Core Drills, Drilling Accessories and Equipment

Obituaries

John F. Reynolds, 76, retired partner of Reynolds, Smith & Hills, architects and engineers of Jacksonville, Fla., and a past national director of the National Society of Professional Engineers. His firm designed a number of bridges, piers, buildings and sewerage projects in the Jacksonville area.

Paul B. Hunt, 68, board chairman of Huber, Hunt & Nichols, Indianapolis general contractors. His company has built plants for Allison Div. of GM, Radio corp. of America and Ford Motor Co. in addition to hospitals, and office buildings.

Richard C. Marshall, 81, consulting engineer who retired from the Army 30 years ago as a brigadier general. During World War I, he was chief of Army construction. Since then he has practiced civil, electrical and mechanical engineering in Chicago, New York and Washington, D. C.

Morgan F. Larson, 78, consulting civil engineer with the Perth Amboy, N. J., firm of Larson and Fox, and one-time governor of the state of New Jersey. Recently a consultant to the State Division of Water Policy and Supply, he is credited with starting New Jersey's big highway-building program in the 1930s.

John H. Healey, 49, project manager for S. J. Groves & Sons, general contractor, Minneapolis. His most recent project had been the expansion of O'Hare Field in Chicago.

Wayne M. Dornbirer, 61, former vice president and general manager of Leo E. Ruisinger, Inc., Columbus, O., contractors, and past vice president and secretary of the Associated General Contractors of America.

Robert C. Burton, 45, Publisher of CONTRACTORS AND ENGINEERS magazine. He joined the publication 10 years ago. He was also a director of the Buttenheim Publishing Corp., which produces the construction journal.

J. M. MacDowell, construction engineer for Brown Engineering, Inc., in their office in Teheran, Iran. Before joining Brown, he was a construction engineer for Atlas Powder Co. for 20 years.

Gerald A. Heffelbower, 56, vice president and a director of the Lathrop Co., a general contracting firm, Toledo, Ohio. He was also a director of Elco Construction Co. in Toledo.

When this plate says "Automatic" or "Semi-Automatic," you know exactly what it means

One advantage of having concrete plant standards is this: *All makers and users of standard equipment now talk the same language.* Through the cooperative effort of the leading manufacturers, precise nomenclature has been established. And printed standards give you the correct definition for every term.

For example, before there were standards, batchers could be described as automatic, semi-automatic or manual with several different meanings. With standards, such confusion is no longer possible. The distinctive operational requirements of each type of batcher are specified in detail. *Conformance with these requirements is certified by Rating Plate.* Manual, partially automatic, semi-automatic and automatic batching systems, and automatic systems with mix selection, are also clearly defined.

One Yardstick for Capacities, Too

Today the industry not only speaks one language, it has one standard yardstick for measuring capacities. The Rating Plate of the Concrete Manufacturers Bureau (CPMB) identifies and guarantees the correct capacity of every standard bin, batcher, elevator and conveyor for storing and handling aggregates and cement.

The bases for determining these capacities, and complete nomenclature, are available to you in "Concrete Plant Standards," officially approved by the Board of Directors of the National Ready Mixed Concrete Association. They represent a combined experience of 236 years in building concrete plants. Concrete producers, contractors and engineers may obtain copies by writing to the Concrete Plant Manufacturers Bureau, 1411 K Street, N.W., Washington 5, D.C.

CONCRETE PLANT MANUFACTURERS BUREAU (CPMB)

An Affiliate of the National Ready Mixed Concrete Association

BLAW-KNOX COMPANY
Pittsburgh, Pa.

BUTLER BIN COMPANY
Waukesha, Wis.

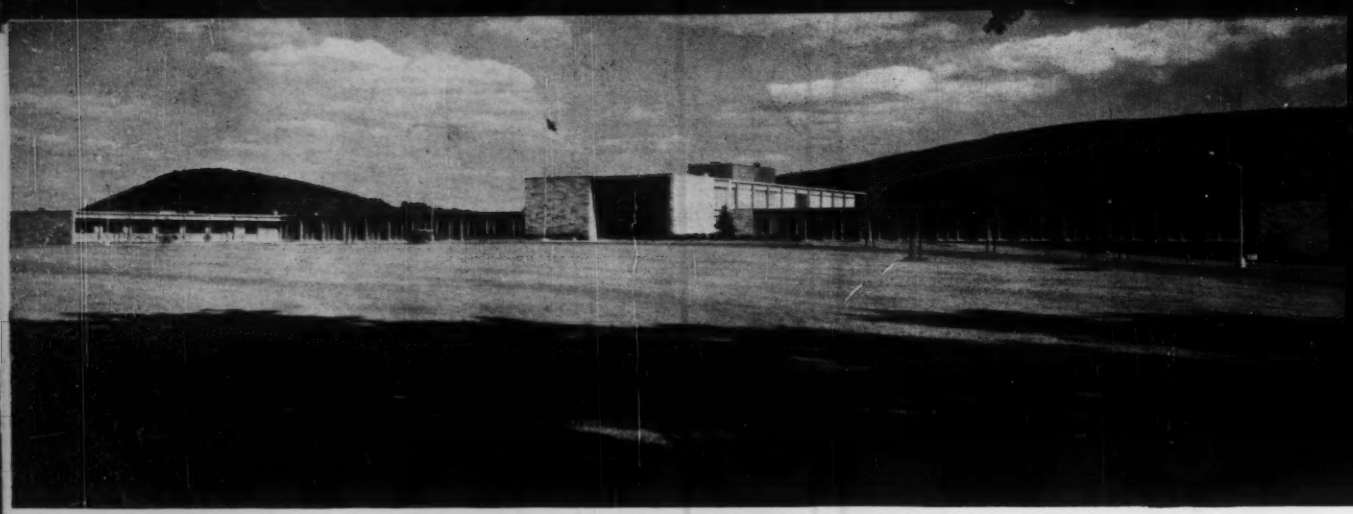
CHAIN BELT COMPANY
Milwaukee, Wis.

ERIE STRAYER COMPANY
Erie, Pa.

THE HELTZEL STEEL FORM AND IRON COMPANY
Warren, Ohio

THE C. S. JOHNSON COMPANY
Champaign, Ill.

NOBLE COMPANY
Oakland, Calif.



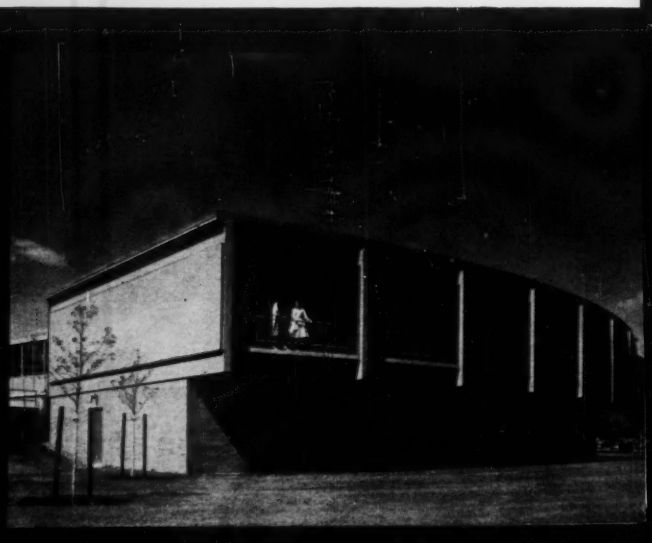
Administrative Headquarters, International Salt Company, Clarks Summit, Pa. Architects-Engineers: Von Storch & Burkavage. General Contractor: Breig Bros. Steel Fabricator and Erector: Anthracite Bridge Company, who fabricated and erected some 450 tons of Bethlehem structural shapes for this building.

A handsome steel frame for "Salt Headquarters"

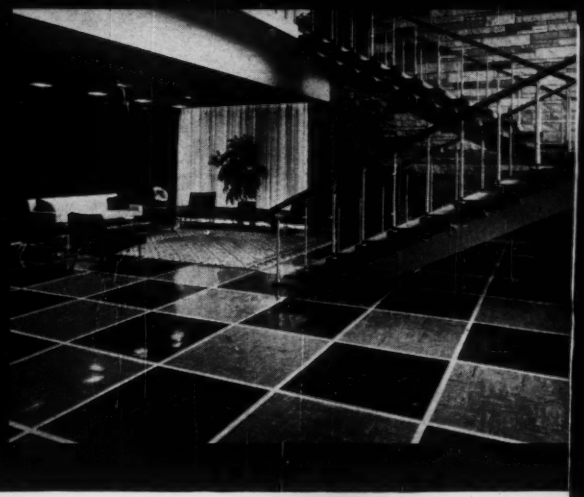
Steel *for Strength . . . Economy . . . Versatility*

Entrance from parking lot. Note unusual effect achieved by hanging roofs on the lower flange of the roof beams, instead of the upper flange.

Balcony of the lounge-cafeteria wing overlooks a beautiful valley. All columns and beams supporting this balcony are left exposed and painted red.



Colorful curtain walls make an eye-appealing exterior. Porcelain-enameled steel panels are blue, steel columns and beams are red.



Steel-framed "floating" staircase dominates the handsome main entrance lobby.

Wherever you look at the new administrative headquarters of International Salt Company, you see steel—exposed structural steel framing, steel roof deck, porcelain-enameled steel panels outside, steel wall partitions inside.

This attractive building dominates a hilltop in a country setting outside Scranton, Pa. Great expanses of glass, glazed to slender steel columns, bring the surrounding countryside inside to join the brightly painted interior. Blue porcelain-enameled steel panels complete the curtain-wall construction, and provide a striking contrast to the exposed steel frame which is painted red.

International Salt wanted a *flexible* building. And they got it, thanks to steel construction. It will be a simple matter to add a new steel frame to the existing one if expansion becomes necessary. The interior steel wall partitions are easy to take down and re-erect, and make possible many variations in room arrangement.

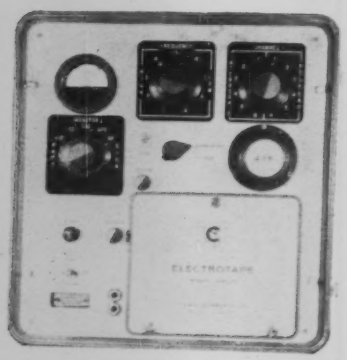
BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY, Bethlehem, Pa. *Export Sales:* Bethlehem Steel Export Corporation

Structural frame is exposed inside, too. Here it lends beauty to the employee lounge and cafeteria (rear), and emphasizes the sturdiness of the structure.

Steel wall partitions throughout the building provide complete interior flexibility.

Cubic DM-20 Electrotape system quickly pinpoints location of off-shore installation.



ELECTROTAPE WORKS WHERE CHAIN AND TAPE WON'T:

The new, lightweight, all-transistorized version of Cubic Electrotape, Model DM-20, marks a major breakthrough in the art of surveying. Electrotape eliminates time-consuming chain and tape work, and lets even unskilled operators measure distances from 150 feet to 40 miles in just a few minutes per set-up. Easily operable by one man, the DM-20 weighs only 25 pounds. Its accuracy is 1 centimeter plus 3 parts per million, and the front panel readout is directly in centimeters, eliminating scope or meter interpretations. The DM-20 operates day and night, in any weather, with a built-in radio-telephone permitting communication between operators at all times. A single tripod-mounted unit incorporates the recessed parabolic antenna, regulated power supply, compact battery, and electronic circuits. **Write for** descriptive literature to Dept. **ENR-102,** Industrial Division, Cubic Corporation, San Diego 11, California.

cubic
CORPORATION
INDUSTRIAL DIVISION
SAN DIEGO 11, CALIFORNIA

Tight Bidding on Lewiston Dam

$2.4 million California dam includes power plant and preliminary work for Trinity River fish hatchery

This 80-ft-high earth fill dam, powerplant, and related works will be just one feature of the system transferring water from the Trinity River, which empties into the Pacific, to the Sacramento, which waters California's agricultural Central Valley. The job is for the U.S. Bureau of Reclamation.

Tight bidding marked the $2,410,542 award. Gibbons & Reed, Salt Lake City, Utah, slid the low just $13,642 (0.5%) under second low, E-W Const. Co., Creswell, Ore. Gibbons & Reed were consistently low on fill prices, bidding $0.34 for 186,000 cu yd sand, gravel, and cobble fill (dam embankment, zone 2), $0.37 under the second low. For rock fill, zone 4, they were $0.41 low with a bid of $0.30 for 86,000 cu yd.

An interesting feature of this contract is plugging an old mining tunnel. It will take about 91 cu yd of concrete to plug the tunnel, a total cost of $5,824. The job also includes a river-outlet works and spillway.

The dam, measuring approximately 740 ft in length at the crest, will regulate releases from Trinity powerhouse and divert surplus Trinity water into Clear Creek Tunnel, a 10.8 mile conduit ending at Whiskeytown Reservoir. The powerplant structure will take about 1% of total contract cost, requiring 300 cu yd of concrete at $80 a unit.

Another 350 cu yd of concrete costing $31,085 will go into outlet-works, regulating structure, pipe encasement, anchor and pier for the Trinity River fish hatchery. Preliminary earthwork and grading will also be done in the hatchery area.

Materials furnished by the Bureau of Reclamation include: radial gates, one 3.5 ft by 2.75 ft high pressure gate, one hydraulic turbine, one hydraulic turbine governor, one butterfly valve, one generator with accessories, miscellaneous electrical items, and lighting fixtures for appurtenant structures.

Wage rates include: skilled, $4.405/hr; semi-skilled, $3.80; and common, $3.045.

The bidding included:

1C	Gibbons & Reed Co., Salt Lake City, Utah	$2,410,542
2	E-W Const. Co., Creswell, Ore	2,424,184
7	Scheumann & Johnson and Pacific Mechanical Constr. Inc., Seattle, Wash	3,574,792
EE	L. B. Ackerman, Project Construction Engineer, Lewiston, Calif	1,982,875

Bids: 12-2-60 Items	Unit	Quantity	Unit Prices 1C	 2
Diversion & care of the river during const & removal of water from fdn	ls	job	$100,000	$150,000
Exc, weathered rock in spillway exc area, separation and transp to points of final use, first 85,000 cy	cy	85,000	1.10	1.00
over 85,000 cy	cy	85,000	0.90	1.00
spillway str	cy	220,000	1.80	1.00
other str	cy	139,000	1.37	1.43
rock, drill line holes	lf	700	2.00	2.20
dam embankment fdn, first 13,500 cy	cy	13,500	3.20	1.43
over 13,500 cy	cy	13,500	0.60	1.43
grout cap, to 5'depth between 5' & 8' depth	cy	350	16.00	3.85
	cy	30	30.00	11.00
Backfill	cy	30,000	0.90	0.80
Fill, earth, dam embankment, zn 1	cy	100,000	0.24	0.22
blanket for rearing pond area, zn 1	cy	36,000	0.24	0.22
specially compacted, zn 1	cy	4,200	2.40	3.10
sand, gvl, cobble, dam embankment zn 2	cy	24,000	0.34	0.71
rockfines, embankment, zn 3	cy	186,000	0.30	0.61
rock, zn 4	cy	68,000	0.30	0.71
Riprap	cy	11,000	1.40	2.20
Surfacing, road	cy	230	1.70	4.40
Surface settlement points, const	ea	7	120.00	60.00
Pipe, sew, perf, f only, & drains, const, 6"⌀	lf	380	4.00	3.35
8"⌀	lf	1,300	5.00	3.70
12"⌀	lf	160	8.00	4.40
Pipe, sew w/closed jts, in trenches, 6"⌀	lf	65	14.00	5.25
Drainage, tunnel access rd, modification, drilling grout holes in stage between following depths, 0-30'	lf	2,500	3.60	4.40
30'-60'	lf	1,200	3.60	4.40
Pipe & ftg for grouting	lb	2,000	0.80	1.10
Hook-up to grout holes & connect	ea	80	30.00	33.00
Grouting, pressure	sacks	3,700	3.00	3.40
Drill holes for anchor bars and grouting bars	lf	8,000	1.30	2.00
Cement, f & handling	bbl	21,485	5.60	5.30
Reinf bars	lb	1,735,000	0.12	0.1275
Conc,[a] in backfill	cy	200	29.00	26.70
in grout cap	cy	380	25.00	27.75
spillway inlet, lining & cutoffs	cy	460	41.00	43.00
walls	cy	980	54.00	52.70
spillway gate str, bri & stoplog slot fillers & covers	cy	1,960	46.00	48.00
in blockouts	cy	90	160.00	103.50
spillway chute & stilling basin	cy	16	120.00	129.00
river-outlet-works intake str	cy	8,000	39.00	47.15
outlet-works cond & cutoff collars	cy	37	145.00	82.00
river-outlet-works gate chmbr, 1st stage	cy	514	84.00	80.00
powerplant str	cy	106	120.00	95.50
river-outlet-works stilling basin & powerplant tailrace	cy	300	80.00	64.00
outlet-works, 2nd stage	cy	240	60.00	52.50
hatchery outlet-works intake str	cy	31	130.00	126.00
regulating str	cy	199	80.00	79.00
pipe encasement, anchor & pier	cy	122	106.00	81.50
Conc, in tunnel plug	cy	29	77.00	87.00
Waterstops, rubber, tp A	lf	91	64.00	53.00
tp B	lf	57	6.00	6.00
tp F	lf	675	2.60	3.75
Seals, met, tp M2	lf	75	4.00	4.00
tp N2	lf	230	3.50	2.75
Dowels	lb	1,300	2.20	2.50
Conc floor hardener, 2-coat	sy	1,220	0.20	1.00
Damproofing, asph emulsion, 2-coat	sy	70	1.20	1.20
compound, clear 3-coat	sy	200	1.10	1.50
Waterproofing, membrane	sf	100	1.60	2.25
Pipes, steel outlet	ls	325	1.20	1.40
		job	43,000	37,400

Bids: 12-2-60 Items	Unit	Quantity	Unit Prices 1C	 2
Cond ventilation sys, air-inlet pipe & drains	ls	job	7,000	6,490
Ventilating sys, gate chmbr & powerplant	ls	job	8,000	7,800
Gates, radial, & embedded met work, instl, 30'x27.5'	ls	job	27,000	22,275
Hoists, gate, radial, instl, 2	ls	job	5,200	5,200
Ab, for 2 radial gate hoists	lb	300	2.00	1.00
Flowmeter, 1, 48"	ls	job	11,000	11,660
Gates, slide, w/motor operated lifts, 3, 18"x24"	ls	job	4,800	4,500
CI, & lift, 1, 72"x72"	ls	job	6,200	6,270
shear, CI, 2, 6"	ls	job	600.00	440.00
hp, & transitions, instl 1, 3'6"x3'6"; 2, 2'9"x2'9"	ls	job	14,000	12,760
Control equip & pipe, instl for 1, 3'6"x3'6" hp gate	ls	job	700.00	440.00
Inlet, air, & bypass pipe, hp gate	ls	job	2,300	2,200
Gage, reservoir level, wells, pipe, recorder	ls	job	4,500	4,400
Trashracks & stop-log slot cover	ls	job	8,800	7,800
Stop-log seats & guides	ls	job	8,400	7,800
Hoist frame & walkway	ls	job	3,400	3,400
Fence, chain link	lf	560	4.00	12.90
Screens, fish, & guides	ls	job	6,400	7,275
Winches, 2, 2-ton	ls	job	6,000	6,200
Metalwork, misc	lb	7,000	0.80	0.71
Doors, steel, industrial tp	sf	50	13.00	10.50
Turbine, hydraulic, & governor, instl & test	ls	job	18,000	17,050
Vlv, butterfly, instl	ls	job	2,400	1,980
Air-compressor, 1	ls	job	1,100	990.00
Sump pump, 1	ls	job	1,500	1,430
Pump, 1, motor-driven vertical shaft turbine-tp, compl w discharge accessories	ls	job	1,900	1,760
CIP, soil[b], embedded & exposed, & ftg, CIP, bell-&-spigot, embedded, & ftg	lb	1,000	2.00	2.00
Pipe, steel exposed, ftg & vlv	lb	1,000	3.00	3.00
Drainage sys, emergency	ls	job	2,700	2,750
Cable, bare strd copper, grnd sys & service str, #4 AWG	lf	800	3.20	3.30
#1 0 AWG	lf	200	3.20	3.30
#4 0 AWG	lf	375	6.00	6.40
Cond, elec, rigid met, 3 4"⌀	lf	1,450	2.10	2.20
1"⌀	lf	450	2.60	2.75
1¼"⌀	lf	300	5.40	5.75
2"⌀	lf	125	7.80	8.15
3"⌀	lf	45	12.40	13.00
3½"⌀	lf	140	13.50	14.20
Cable or wire, elec, single-conductor, insul, 600-v, #12 AWG	lf	3,070	0.30	0.22
#10 AWG	lf	2,150	0.40	0.33
#8 AWG	lf	750	0.50	0.44
#6 AWG	lf	170	0.60	0.55
Mils, 600,000 circular	lf	600	1.80	1.90
Cable, buried insul power, from powerplant to hatchery outlet works	lf	160	5.70	5.95
Generator, 432-kva, instl	ls	job	10,000	9,800
Cable, buried insul power & control, from powerplant spillway gate str	lf	660	7.20	7.50
Service str	ls	job	12,000	12,430
Generator & sta-service control equip	ls	job	26,000	23,000
Receptacles, power, 3-phase 440-v	ea	2	70.00	71.00
Alarm sys	ls	job	160.00	165.00
Lgt fixtures, powerplant tp B	ea	4	65.00	66.00
tp C	ea	1	75.00	77.00
tp D	ea	4	110.00	115.00
tp E	ea	1	65.00	66.00
tp F	ea	1	75.00	77.00
tp G	ea	1	220.00	220.00
Receptacles, plug, 120-v	ea	9	30.00	30.00
Switches, lgt control	ea	3	30.00	30.00
Wiring devices for appurt str	ea	15	30.00	31.00
Lgt fixtures for appurt str stand-lgt tp	ea	8	200.00	210.00
vaporlgt tp	ea	6	65.00	66.00
Elec apparatus for appurt str, instl	lb	1,100	4.00	4.10

[a] 3,000 psi at 28 days [b] ATM designation, W.W.P-401
[c] W.W.P-421

Completion time: 700 calendar days
Liquidated damages: $400 per day

ENR Construction Cost Index (1913-100) 20-cities average—830.61

Materials Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR Issues for OTHER PRICES:

- Wood Products, Glass, Explosives, Chemicals: Last, Apr. 20; Next, May 18.
- Iron & Steel Products, Pipe: Last, Apr. 13; Next, May 11.
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Apr. 27; Next, May 25.

CEMENT, AGGREGATE, READY MIXED CONCRET - F. O. B. CITY

Item	Quantity	Unit	Atlanta	Baltimore	Birmingham	Boston	Chicago	Cincinnati	Cleveland	Dallas	Denver	Detroit	Kansas City	Los Angeles	Minneapolis	New Orleans	New York	Philadelphia	Pittsburgh	St. Louis	San Francisco	Seattle	Montreal	†Toronto
Cement, Port., bulk	CL	bbl	$3.80a	$3.91a	$3.50-f	$4.53ap	$4.02ag	$4.31e	$3.89	$3.46a	$4.39a	$3.91azq	$3.97a	$4.68eh	$4.17a	$3.65b	$4.20a	$4.01#ae	$4.62bj	$4.09a	$3.85e	$3.75ag	$3.11de#	$3.84t
paper	"	"	4.30a#	4.42a	4.13c	5.83ap	4.52ag	4.84e	4.77#	3.90a	4.89a	4.24a	4.52a	5.12eh	4.65a	4.17b	4.71a	4.51#ae	5.65bjk	4.59a	4.42e	4.47#a	3.36#de	4.20i
mortar	"	"	3.62a#	3.56a		4.90mp	4.15g	4.31e	4.19#ae	3.75a	4.89	3.29a	4.30a	5.60c	4.26a	3.97b	3.77a	3.63#e	5.00bjl	4.29a	4.86e	4.65a	3.72#de	4.20i
Gravel, 1½"	"	ton	2.25s#	2.80a#	2.53ns	3.00qsz	3.78#e	2.29#cu	2.25ae	2.55#a	1.95#	2.50#abm		2.56#at	2.70#ae	2.61b		1.95#a	2.68#aqv	3.40#as	2.02	4.25#bm	1.90#a	2.40
¾"	"	"	2.50s#	2.80a#	2.53ns	3.00qsz	3.78#be	2.31#cu	2.25ae	2.60#a	2.15#	2.50#abm		2.76#at	2.70#ae	2.61b	3.20bk	1.95#a	2.68#aqv	3.40#as	2.02	4.25#bm	2.15#a	2.40
Sand	"	"	2.00s#	2.25a#	2.13ns	3.00qsz	4.13#be	2.44#cu	1.75ae	1.65#	1.42#b	2.16#abm	1.70#a	2.41#at	1.60#ae	2.16#b	2.30bkw	1.55#a	3.08#aqv	2.40/3.40#as	2.12	4.25#bm	2.40#a	2.05
Crushed stone, 1½"	"	"	3.05s	2.85a#	2.75s	1.75qsz	3.95#be	2.55#cu	2.70fy	2.57		2.80#abm	2.10#a	2.41#at	4.00#ae		2.85blbb	2.00#a	2.00#aqv	1.75js	2.17	4.50#bm	1.90#	2.40
¾"	"	"	3.05s	2.90a#	2.75s	1.85qsz	3.95#be	2.74#cu	2.70fy	2.77	3.00#x	2.80#abm	2.10#a	2.46#at	4.00#ae		2.85blbb	2.30#a	2.00#aqv	1.75js	2.17	4.50#bm	2.15#	2.40
Crushed slag,* 1½"	"	"	3.90r	2.05a#	1.65d		2.25#e	1.80u	2.30#f			3.15aqaa				1.65d		2.25#a	2.10w	1.80			2.00	2.30
¾"	"	"	3.90r	2.00a#	1.75d		2.25#e	1.80u	2.30#f			3.50aqaa				1.75d		2.35#a	2.10w	1.85			2.00	2.40
Concrete block, 8"x8"x16"																								
Sand gravel	TL	ea	0.19o	0.18a	0.19	0.23o	0.26#e	0.19o			0.25	0.24u	0.22a	0.175f	0.20q	0.25r	0.265nwo		0.22rx	0.26#o	0.24	0.28#a	0.20	0.26
Lt. wgt. agg	"	"	0.22o	0.18a	0.19	0.205ao	0.26#be	0.25ao	0.23f	0.255	0.27ao	.27#au	0.27e	0.25		0.25	0.32bwo	0.20	0.22rx	0.32#eo	0.28el	0.38#e	0.28t	0.30cu
Concrete, ready-mix'r		cy	13.00g	13.50ou	14.75q	15.00q	14.00e	15.00gr	17.25a	11.50x	11.90	15.50eaa	13.50	12.46blx	14.55f	14.00o	17.60av	13.90z	16.15o	12.65/14.10q	12.50ew	14.70j	10.00ek	13.75q

Delivered. * F.o.b. plant. ** Add 4% sales tax. ## Add 2% Intrastate sales tax. R Revised. † Plus 6% Mun & Prov tax.

CEMENT: •a Less 10¢ disc. 15 days. •b Less 2% disc. 15 days. •c Less 10¢ disc. 10 days. •d 10¢ disc. 20 days. •e Truckload lots. •f Fob mill, add $14.58 to $21.31 per car switching charges. •g fob mill + freight. •h LCL. •i Less 2% disc. 10 days. •j Truck lots, fob yard. •k 100 bag lots. •l over 150 sacks. •m Sold in bags only. •n Less 5% disc. 30 days. •o Plus 50¢ for Sat. del. •p 5-8 ton truckload. •q F.o.b. mill. •r 50 cy & over. •s In bags & bbl. Only. •t min. 7 tons

SAND, GRAVEL, STONE & SLAG: •a Truck lots. •b Per cu. yd. •c 5 tons up. •d Less 5¢ disc. 10 days. •e Less 2% disc. 10th. •f Less 2% disc. 15th. •g Less 5% for cash. •h Less than 5 tons. •j F.o.b. quarry. asd. •k Barge lots •l F.o.b. scow Hudson river. •m Less 2% for cash. •n F.o.b. cars. •o F.o.b. yard. •r less 5% disc. 15th. •s Less 2% disc. 10 days. •t Less 10¢ disc. 10 days. •u Less 5¢ disc. 10 days. •v Less 2% disc. 15 days. •w Less 10¢ disc. 15 days. •x Incl. 35¢ switch charge. •y F.o.b. dock. •z 5-8 tons. •aa Less 5% disc. 15 days. •bb Less 2% 25th of month

CONCRETE BLOCK: •a Cinder. •b Waylite. •c Haydite. •d Celocrete. •e 5¼ x 8 x 12 in. •f 8 x 4 x 16 •g F.o.b. truck at job. •l F.o.b. plant San Rafael. •m F.o.b. yard. •n 8 x 8 x 18. •o Less 2% disc. 10 days. •p Less 2% disc. 10th. •q Less 5% disc. 10th. •r Less 2% disc. 15 days. •s Less 2% disc. cash. •t Siporex, 7 x 8 x 18. •u Less 5% disc. 10 days. •v Less 12% disc. 15th.

READY MIXED CONCRETE: •a 6 cu yd or over del. Man. •b 25 cu yds or more. •c 10-100 cy. •d 1-3 mi. zone add 15¢ for ea. add'l 1-mi. zone. •e 3,000 lb comp. •f 2,500 lb. comp., less 5% disc. 30 days. •g Less 25¢ disc. 15 days. •h Less 50¢ for cash. •i 5% off for cash. •j 2% off for cash. •k Federal tax included. Add 6% mun. & prov. tax. •l 1:2½:3½ base price. •m F.o.b. yard. •n Plus escalator clause. •o Less 2% disc. 15 days. •p Less 50¢ disc. 15 days. •q Less 2% disc. 10 days. Add 50¢ per zone. •r 2000 wgt. •s Less 5% disc. 10 days. •t Incl. 50¢ heating. •u Less 2% disc. 15th. •v Sat. del. +50¢. •w 10-100 cy. •x Del in zone 20-B. •y less 25¢, 10 days. •z less 1% in 30 days. •aa 6 bag mix

MILL PRICES FOR BULK CEMENT: Subject to 10¢ discount, 15 days. For paper bags add 50¢ per bbl., not refundable. *Prices guaranteed through December 31, 1961*

Richard City, Tenn	$3.55	Bath, Pa	$3.50	Northampton, Pa	$3.50	Leeds, Ala	$3.40	Howes Cave, N. Y.	$3.50	Oswego, N. Y.	$3.60	Green Bay, Wis	$3.60
Clinchfield, Ga	3.55	Lesley, Pa	3.50	Universal, Pa	3.60	Duluth, Minn	3.60	Muskegon, Mich	3.55	Cleveland, O	3.65	Ironton, O	3.65
Kingsport, Tenn.	3.55	Buffington, Ind	3.55	Waco, Tex. (+10 tax)	3.35	Hudson, N. Y.	3.50	Saginaw, Mich	3.60	Alsen, N. Y.	3.50	Montreal, Canada (a)	2.80
West Des Moines, Iowa	3.65	Independence, Kan	3.35	Giant, S. C.	3.55	Alpena, Mich	3.50	Wyandotte, Mich	3.60	Toledo, O	3.60	W. Winfield, Pa	3.61
Nazareth, Pa	3.50	Hannibal, Mo	3.55	Steelton, Minn	3.60	Detroit, Mich	3.60	Buffalo, N. Y.	3.55	Milwaukee, Wis	3.60	Security, Md.	3.50

•a 280 lb. bbl.

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS - F. O. B. CITY

Item	Quantity	Unit	Atlanta	Baltimore	Birmingham	Boston	Chicago	Cincinnati	Cleveland	Dallas	Denver	Detroit	Kansas City	Los Angeles	Minneapolis	New Orleans	New York	Philadelphia	Pittsburgh	St. Louis	San Francisco	Seattle	Montreal	Toronto
Paving brick, block-																								
Brick, 3"x4"x8"	CL	M	e	e		e	e $150.00#ab		e	e	e	e	e	e	e	e	e	e	e $60.00k	e	e	e	e	e
Granite, 4"x4"x8"	q	M	e	e	$96.00b		e 95.00#a		e 89.50	40.80	62.00a	$114.00	e	e	e	e	e	e	e 95.00n	e	e $70.00	e	e	e $120.00f#
Wood, 3½" 16 lb		sy	e	e	e	e	e 3.95-4.00aj		e 6.30	e	e	e	e	e	e $3.73	e	e $3.70f	e	e 6.35n	e	e	e	e	e 4.50f
Asphalt, paving																								
Tank car	CL	ton	$0.1182W	$21.00	25.12 O	$22.00apS	22.00b	$24.00SU	26.00tA	26.90		31.00#	$18.75vl	$18.00dmx	23.70	$20.00e	22.90-nO	0.22a	31.20isv	$19.74	22.50gdd	$24.00z	$30.50n	38.90
Drummed	CL	gal	0.1220W		25.69	46.00apS	32.00b			46.35							67.83nO			21.65	41.00gdd	47.00h	43.60n	59.01ee
Asph. binders, fluxes																								
Tank car	CL	ton	0.1182W	0.9i	0.1069	22.00avS	20.40bv	24.00ffy	26.00tvA	.1138		31.00#	18.75cv	18.00dvx	23.70	20.00ev	22.90vtO	0.22a	31.20isv	.1825f	22.50gkvdd	33.00vsee	0.167n	0.2075ee
Drummed	CL	gal.	0.1220W	0.18i	0.1093	46.00avS	30.40bv			.1983							67.83vtO			.1825	40.00gkvdd	38.50	0.211n	0.2773w
Asph. cutback, MC																								
Tank car	CL	ton	0.1222W	0.9i	0.1163w	0.105awF	10bwH	0.1165twAF	0.1165twSU	30.50		30.24vl#	.0825wJ	19.50JKx	.0105w	0.095ew	10.16aF	0.10U	0.1403#S	.09f	22.50gNdd	25.50KE	17.80nuE	0.222wee
Drummed	CL	gal	0.125sW	0.18wE	0.1188Ow	0.22awF	.18bwH			52.45							29.62aF			.092f	46.50gNdd		22.20nuE	0.2704
Road oil, tank car	CL	gal		0.95i	0.1096O	0.14aOR	.08b	0.109		.1100		27.81v	.0675le	18.50dvaa	0.95	0.085eB		0.095U	0.1145	.165f	23.25gvWdd	28.75hvY	0.155n	0.2334w
Asph. emul. RSI																								
Tank car	CL	ton	0.1288W	0.10i	0.1069	0.150R		0.1265	0.1265tA	0.1138		.10	21.40JXv	0.137bb	0.095+BL	10.15q		0.1403i	.18250	23.50gvXdd	25.80hvX	0.242n	0.212Zee
Drummed	CL	gal	0.1327W	0.19i	0.1093O				0.21A	0.1983		0.29	.1842JXv		0.1905eB	29.81q			.30	.2023gXdd	49.80hrvX	0.27nX	.268Zee

PAVING BRICK & BLOCK: •a Less 2% disc. 10th. •b 3 x 3¼ x 8. •c 2¼ x 8 x 4. •d Truckload lots. •e Not used. •f 2" interior 6 lb tr. •g Less $1 Mdisc. 15th. •h 2" tr. 8 lb. •i 3 x 3⅝ x 8½. •j 2½", 6 lb. tr. •k Used. •l Redshale. •m Pine; oak $6.57. •n Truck del. •o Less $1 M disc. 15 days. •p Used $40; new: $80. •q Lots of 50M.

ASPHALTS: •a F.o.b. refinery, Everett, Mass. •b F.o.b. refinery, Lockport, Ill. •c F.o.b. Sugar Creek, Mo. •d F.o.b. refinery, El Segundo. •e F.o.b. Baton Rouge. •f F.o.b. Hartford, Ill. •g F.o.b. refinery, Richmond, Calif. •h F.o.b. Martinez. •i F.o.b. refinery, Baltimore. •j F.o.b. refinery, Inglewood, Calif. •k 50-110 'penetr. •l Less than 100 penetr. •m 40 300 penetr •n F.o.b. refinery, Montreal. Fed. tax included; add 6% for mun. & prov. •o Drums not avail. Shipped in steel bbl. •p 60 70 penetr. •r In customer's drums. •s Shipped in drums, per drum. •t 150 300 penetr. •u Per 100 gal. •v Per ton. •w Per gal. •x Also tank trucks •y F.o.b. Oakland. •z F.o.b. Edmonds. •A F.o.b. refinery, Cleveland. •B F.o.b. Destrehan, La. •E RC. •F Also RC. •G Also MS •H RC 0-5 incl. •I MC 4. •J MC, RC $0.095. •K MC 3, 4, & 5. •L MS. •M MC 1-5, RC 1-5, $0.0918. •N MC 3. •O Truckload. •P F.o.b. refinery, Atlanta. •Q F.o.b. Eldorado, Ark. •R Delivered within 50 mi. •S Less 2% disc. 10 days, net 30. •T Less 1% disc. 10 days. •U F.o.b. refinery. •V Less 2% disc. 15 days. •W SC 2. •X RS 1. •Y SC 1. •Z Incl. 10% Sales Tax. •aa SC 3, 4, & 5. •bb RS 3. •cc In used drums. •dd less disc of $1 ton. •ee 45 Imp. gal. drums •ff 60-150 penetration

Labor and Materials Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES.

- Wood Products, Glass, Explosives, Chemicals: Last Mar. 23; Next, Apr. 20.
- Iron & Steel Products, Pipe: Last, Mar. 16; Next, Apr. 13.
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Apr. 27; Next, May 25.

HOURLY WAGE RATES—Base rate + fringe benefits

Classification	Atlanta $ + ¢	Baltimore $ + ¢	Birmingham $ + ¢	Boston $ + ¢	Chicago $ + ¢	Cincinnati $ + ¢	Cleveland $ + ¢	Dallas $ + ¢	Denver $ + ¢	Detroit $ + ¢	Kansas City $ + ¢	Los Angeles $ + ¢	Minneapolis $ + ¢	New Orleans $ + ¢	New York $ + ¢	Philadelphia $ + ¢	Pittsburgh $ + ¢	St. Louis $ + ¢	San Francisco $ + ¢	Seattle $ + ¢	Montreal $ + ¢	Toronto $ + ¢
COMMON LABOR																						
Building	2.00	2.30+7½	1.95	2.75+10	3.025+7½	2.80	3.37	1.85	2.32	2.90+34	2.705	3.08+10	2.85	1.925	3.55+28	2.60+15	2.725+20	2.925+10	3.045+10	3.00+25	1.75+4	2.00+8
Heavy Const.	2.00	2.30+7½	2.05	2.75+10	3.025+7½	2.90	3.285	1.85	2.42	2.90+34	2.755	3.08+10	2.98	2.00	3.55+28	2.55+10	2.55+20	2.925+10	3.045+10	3.00+25	1.75+4	2.00+8
SKILLED BUILDING TRADES																						
Bricklayers	4.00	4.10+15	4.05	4.05+30	4.225+10	4.025+12	4.085+10	4.15	4.00	3.98+33	4.20	4.20+25	3.875+15	3.725+7½	5.00+61	4.25+17	4.50+20	4.25+33	4.40+42½	4.15+30	2.55+6	3.20+13
Carpenters	3.35	3.60+7½	3.23	2.65+10	3.91+20	3.90	4.11	3.50	3.65	3.63+46	3.75	3.825+20	3.65	3.30	4.65+37	3.885+15	4.125+20	3.875+10	3.725+36	3.53+20	2.35+5	2.95+12
Struct. Iron Workers	3.70+7½	4.10+20	3.72+10	4.14+20	4.35+16	3.95+10	4.01+10	3.55+7½	3.81+10	4.00+27½	3.90	4.275+25½	3.62+15	3.60+10	4.95+69	4.45+23	4.30+20	3.875+10	4.275+25	3.92+10	2.55+6	3.05+12
Plasterers	3.50+3	3.85+10	3.37	3.80+45	4.00+27	3.875+1	4.11	3.875+10	3.975+15	3.75+41	4.00	4.25+42½	3.65+33	3.34+5	4.70+67	4.15+20A	4.225+20	4.00+7½	3.79+63	3.87+32	2.65+6	3.20+21
Electrical Workers	4.00+5	3.85+10	3.65	4.10+25	4.30	4.09+51	4.17	3.625+7½	4.05+4%	4.00+52	3.90+43	4.65+46	3.70+44	4.00+7½	4.40+26	4.525+18	4.60+34½	4.11+51	4.22+29	3.95+27	2.45+5	3.52+14
Steamfitters	3.85+22½	3.96+18	3.80+12	3.95+27	4.10+25	4.10+9½	3.91+20	3.70+8½	3.95+10	3.90+51	3.975+245	4.33+64	3.62+37	3.80+7½	4.65+60	4.20+32	4.20+20	4.275+25½	4.36+72	4.14+29	2.62+6	3.47+13
EQUIPMENT OPERATORS																						
Hoisting Engineers	3.675	4.10+20	3.30	4.05+20	3.90+05	3.80A	4.11	3.65	3.25	3.63+39½	3.72	3.81+20	3.60	3.425+7½	4.90+39	4.345/4.055 +20A	3.73+20	4.00	3.80+35	3.84+20	1.95+4	3.20+13
Tractor Operators (B)																						
34–49 hp	3.15	3.70+20	3.30	3.575+35	3.65+5	3.575+10	3.86	2.625	2.50	3.63+39½	3.025	4.11+20	3.36	3.425+7½	4.275+34	3.63+10	3.72+20	4.00	4.01+35	3.81+20	2.18+5	2.45+10
70–100 hp	3.15	3.70+20	3.30	3.575+35	3.80+5	3.575+10	3.86	2.625	3.10	3.63+39½	3.475	4.11+20	3.60	3.425+7½	4.275+34	3.775+10	3.72+20	4.00	4.01+35	3.81+20	2.18+5	2.55+10
Over 100 hp	3.15	3.70+20	3.30	3.575+35	3.85+5	3.575+10	3.86	2.625	3.10	3.63+39½	3.475	4.11+20	.....	3.425+7½	4.275+34	3.775+10	3.72+20	4.00	4.01+35	3.81+20	2.18+5	2.55+10
Tractor Scraper, 15–16 cy	3.15	3.70+20	3.30	3.575+35	3.85+25	3.575+10	3.86	2.625	3.10	3.63+39½	3.475	4.21+20	3.60	3.425+7½	4.40+35	3.90+10	3.92+20	4.00	4.14+35	3.81+20	2.45+5	2.55+10
Power cranes & shovels																						
½ cy	3.675	4.05+10	3.30	4.00+35	4.25+5	3.575+10	4.11	3.375	3.25	3.63+39½	3.72	4.21+20	3.82	3.425+7½	5.15+41	4.345+20	3.92+20	4.00	4.31+35	4.18+20	2.45+5	3.05+12
¾ cy	3.675	4.10+20	3.30	4.00+35	4.25+5	3.80+10	4.11	3.375	3.25	3.63+39½	3.72	4.21+20	4.08	3.425+7½	5.15+20	4.345+20	3.92+20	4.00	4.31+35	4.18+20	2.18+5	3.20+12
Motor grader operator	3.15	3.25+20	3.30	4.00+35	3.85+5	3.80+10	3.86	2.625	3.10	3.63+39½	3.72	4.21+20	3.36	3.425+7½	4.40	3.875+20	3.92+20	4.00	4.21+35	3.90+20	2.05+5	2.85+11
Air Comp. operator	2.825	3.30+20	2.89	3.55+35	3.70+5	3.80+10	3.735	2.00	3.10	3.63+39½	3.475	3.33+20	3.25	2.72+7½	4.40+35	3.51+20	3.43+20	3.45	3.48+35	3.54+20	2.05+5	2.55+10
Air tool operator	2.22	3.325+7½	2.15	2.80+10	3.85+5	3.80+10	3.735	2.00	2.60	3.03+34	2.80	3.29+10	3.15	2.025	4.00+20	2.55+10	2.60+20	3.45	3.475+10	3.35+10	2.05+5	2.55+10
TRUCK DRIVERS																						
1½ Ton	2.10	2.20+075	2.00	2.70+23	2.68+21	2.65+62½	2.92+15	2.625	2.70	3.03+18	2.68	3.365+10	2.85	3.425+7½	3.275+28	2.45+16	2.59+20C	2.93+15	3.79+11	3.40+20	1.75+4	2.05+15
Under 4 cy	2.20	2.20+075	2.20	2.70+23	2.68+21	2.70+6½	2.92+15	2.625	2.85	3.03+18	2.68	3.365+10	2.85	3.425+7½	3.275+28	2.45+15	2.635+30	3.13+15	3.27+11	3.40+20	1.75+4	2.05+15
Over 4 cy	2.50	2.20+075	2.45	2.70+23	2.68+21	2.75+6½	2.92+15	2.625	3.05	3.03+18	2.755	3.555+10	3.00	3.425+7½	3.275+28	2.45+15	2.735+20	3.23+15	3.08+11	3.60+20	1.75+4	2.05+15

ENR Skilled Labor Average (Bricklayers, Carpenters, Iron Workers): $4.135, ENR Common Labor Average $2.777 Description of fringe benefits last appeared Sept. 22, 1960. •A 2 drum. •B Including Bulldozers •C correction

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	Atlanta	Baltimore	Birmingham	Boston	Chicago	Cincinnati	Cleveland	Dallas	Denver	Detroit	Kansas City	Los Angeles Q	Minneapolis F	New Orleans	New York	Philadelphia H	Pittsburgh	St. Louis HO	San Francisco	Seattle	Montreal	Toronto
GYPSUM BOARD & LATH																						
Plaster board, ½"	$62.50F	$51.00	$63.00H	$60.00mH	$67.50	$53.50wH	$63.00CF	$56.25	$62.50H	$66.00K	$72.00H	$67.00F	$75.00	$57.00H	$65.00H	$54.00	$74.00K	$56.50–67.50	$60.00	$71.75K	$58.00M	$49.50
" " ⅜"	52.50F	47.50	52.00H	50.00mH	54.50	43.85wH	56.50CF	46.85	51.50H	56.00K	62.00H	60.50F	65.00	52.00H	55.00H	45.00	65.00K	51–56HO	49.00F	59.50K	50.00M	37.25
Board lath, ⅜"	40.00F	35.75	47.77H	35.00mH	45.00	33.05wH	39.00CF	42.50	43.00H	42.45K	45.00H	0.33xF	0.41xL	45.00H	42.50H	36.50	40.00K	40.00HO	0.36xF	51.50K	39/42.00M	41.00L
SHEATHING																						
Gypsum T & G, ½"	62.50F	55.70	75.00H	55.00mH	62.50	51.16wH	58.75CF	56.25	67.00H	66.00K	.....	64.50F	75.00	60.00H	60.00H	52.50	63.00K	67.00HO	61.00F	70.00K	54.00M	70.00
Fiber board, ½", sq. e	72.00F	65.00	67.50H	65.00H	87.00	77.00wH	80.00CF	68.75	62.50H	48.50DK	75.00H	75.00F	95.00	67.00H	78.00	65.00	60.00K	65–75HO	70.00F	68.50K	63.00M	75.00T
" " 25/32", T & G	.....	108.50	140.50H	120.00H	123.00	125.00wH	129.00CF	118.00	103.50H	85.65DK	122.00H	125.00F	130.00	140.00H	124.00	110.00	100.00K	115/120	111.00F	68.50K	.....	.....
INSULATION																						
Fiber board, sq. e., ½"	75.00F	69.00	83.50H	79.00hnH	87.00	72.50wH	80.00CF	68.75	77.00	62.50DK	80.00H	80.00F	78.00	80.00H	78.00	65.00	60.00K	75/80	69.00F	71.00K	73.00M	83.00T
Min. wool, loose	1.59z	1.40F	1.40	1.40bH	1.85	1.45wH	1.35	2.00	1.55b	1.45b	1.40H	76.00BeF	2.25y	3.00L	1.55b	1.20	1.25sK	125/135	1.75F	1.25tK	1.35M	1.85
" " 3" batts	67.80F	.....	70.00	75.00H	80.00	60.00wH	70H	70.00	65.00ub	52.00	75.00H	83.00F	80.00	70.00•	68.50k	50.00	55.00K	60/70	66.50F	58.00K	60.00M	57.50
Glass fiber, loose	1.45	1.60F	2.00	.....	.....	1.45wH	.....	1.75	2.00b	1.85b	1.80H	1.35s	2.10	.....	.....	1.40	1.25sk	2.00P	1.75F	1.90•pK	1.35M	.....
" " 3" batts	50.00F	47.00F	65.00	75.00H	63/65	60.00wH	61.00	70.67	65.00a	80.00	75.00H	64.00	80.00	.....	68.50	50.00	55.00K	67.00	66.50F	51.00•lKh	60.00M	57.50
Aluminum foil, 1 side	3.75qi	4.00F	3.77gG	5.30xHS	5.25	3.02jwJ	14.00ioJ	5.00gAG	5.25	.....	3.60d	4.65g	4.25	6.50	4.38iH	2.90	4.25igK	4.39ig	5.10	7.47K	9.00qM	15.50o
" " 2 layers	.....	33.50F	.....	53.50qH	.....	66.00wJ	55.00J	45.00	48.65	.....	60.00	7.90V	.....	.....	40.00eH	83.50	38.50K	.....	60.00F	39.53EK	56.00M	46.00

•• F.o.b. warehouse. •a Semi thick. •b 30# bag. •c 3 layers of foil: $54.50. •d 40# kraft paper, 5 Msf, 100/500 rolls. •e 20# sq ft bag, 4" thick. •f Full trailer loads. •g 80# kraft paper backing 400 rolls or over. •h LCL. •i 40#. •j 80#. •k 2-in. •l 2". •m 8 to 10 ton quantities. •n Distributor's siding. •o Per Msf roll. •p 32# bag. •q 500 sf. •s 35# bag. •t 26# bag. •u Flame proof $75. •v 5000 sf quantity. •w F.o.b. city. •x Sq. yd. •y 30# bag. •z Spun rock wool. •A 650 sf. •B ton •C F.o.b. plant, freight allowed. •D CL. •E 10 Msf. •F Less 2% disc, 10th. •G ½ of 1% 10 days. •H 2% disc, 10 days. •J 1% disc, 10 days. •K Less 2% for cash. •L 5% disc, 10th mo. •M fed. tax incl. •N 1% disc, 10 days. •O add 2% sales tax. •P 50 lb. bags. •Q add 4% sales tax •R revised. •S 45 lb. •T less 2%, 30 days. •U lots of 2606 sq. ft. •V 250 sf roll.

MEXICO CITY WAGES AND PRICES, APRIL, 1961

WAGES, av per week, 8 hr day (pesos) 6 days work-extra day's pay

Common labor, building (peons)		101.50
	heavy const (peons)	136.50
Skilled labor;	carpenters 1 cl	210.00
	bricklayers 1 cl	245.00
	struct, ironworkers	315.00

MATERIAL PRICES, F.o.b. City (pesos)

Struct. steel shapes, fob Monterrey		
I-beams, 3 x 3 x 4"	per metric ton	1942.10
Reinf. steel, corrugated rods, per ton		
⅜"-½" x 11 meters consolidada		1875-1950
¾"-1" x 11 meters		1750.00
Gravel, truckload, per cu meter		
Blue gravel		30.00
Cement, std. port. (Tolteca)	per metric ton	260.00
Lumber, 2" x 4" 1st class pine 20 ft	per M sq. ft.	2800.00
2" x 4" 2nd class pine	per M sq. ft.	2300.00

Bids Asked—Low Bidders—Contracts Awarded—

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲ **N. Y., New York**—BA 6/2—New York City Transit Auth., 370 Jay St., Brooklyn, Zone 1, constr. part of RAPID TRANSIT RAILROAD, Section No. 13, Rte. No. 101, 6 Ave. W. 19 to W. 31 Sts., Manhattan Boro. CD 3/14/55.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany, ROAD,

Colonial Asphalt Paving & Mt. Vernon Constr. Corp., 22 W. 1st St., Mount Vernon, N. Y., CA **$2,585,530** est. $2,672,000, b. conc. 6.34 mi. 2 brs. comp I-beam 1 Sp. 68.15 ft. 1 sp. 48.31 ft. alterations to Dam Bridge, Seven Lakes Parkway (Sloatsburg to Kanawauke Circle) SLP 61-1, Rockland and Orange Counties. BA 3/29. CA 4/20 CD 3/30/61, under LB.

BUILDINGS—LB & CA

▲ **B. A. W. Constr. Co.**, 84 Colorado Ave., Buffalo, N. Y., CA **$2,984,977**, STUDENT UNION, BUFFALO, N. Y. University of Buffalo, Main St., Buffalo, N. Y. BA 4/6, CA 4/12. CD 4/11/61, under LB.

▲ **Atlantic Cement Co. (subsidiary of Cerro Corp. and Newmont Mining Corp.)**, 300 Park Ave., New York 22, N. Y., Owner Builds, **$64,000,000**, CEMENT MILL, RAVENA, N. Y. CD 3/22/61.

▲ **Elroy Homes, Inc.**, 2701 Chapel Ave., Delaware Twp., Merchantville, N. J., Owner Builds, **$4,125,000**, 275-unit RESIDENTIAL DEVELOPMENT, Knollwood Dr., etc., ERLTON, N. J.

▲ **Hillcrest Constr. Co.**, 239 Concord Rd., Chester, Pa., CA Approx. **$3,000,000**, SHOPPING CENTER, Memorial Hy., Lopatcong Twp., PHILLIPSBURG, N. J. Gallagher & McManus, 239 Concord Rd., Chester, Pa. Alexander Ewing Assoc., 1720 Western Saving Federal Bldg., Phila., Pa., archts.-engrs. CD 1/29/60.

▲ **Frank Harrison 3rd**, 617 S. 52nd St., Phila., Pa., Owner Builds, **$3,400,000**, RESIDENTIAL DEVELOPMENT (200), BROOKHAVEN, PA. George Hay, Media, Pa., archt.

▲ **Joseph Farrell, Inc.**, 144 Cedar Ave, W. Conshohocken, Pa., CA **Total Est. $4,500,000**, foundation for HOSPITAL, PHILA., PA. American Federation of Labor Hospital Assoc., 253 N. Broad St., Phila, Pa. BA 3/14/61. CD 3/10/61.

SOUTH

HEAVY CONSTRUCTION—BA

▲ **Virginia and Maryland**—BA 5/15—Washington Gas Light Co., 1100 H St. N.W., Wash., D. C., (selected list of bidders), 15.8 mi. 24 in. DISTRIBUTION LINE from Hybla Valley near Alexandria, Va., across Potomac River into Prince Georges Co., Md. CD 10/27/60.

BUILDINGS—BA

▲ **Ala., Fairfield**—BA 5/25—Fairfield Housing Auth., 4606 Carnegie Ave., 100 bldg., 200 unit low rent HOUSING, Ala. 10-2, $2,500,000. Plans deposit $50. Henry H. Caldwell Jr., 17 South Plaza, archts. CD 2/4/59.

▲ **Tenn., Memphis**—BA 6/2—Dist. P. Wks. Office, 6th Naval Dist., Bldg. 13, U. S. Naval Base, Charleston, S. C., CAPEHART HOUSING PROJECT, U. S. Naval Air Station, NBy(CH)-37680, Spec. 37680/61. Plans deposit $50. CD 3/13/61.

HEAVY CONSTRUCTION—LB & CA

▲ **GEORGIA**—State Hy. Dpt., No. 2 Capitol Square, Atlanta, Zone 3, ROADS,

Hugh Steele, Inc., Centre, Ala., CA **$2,188,240**, grading, paving 16.842 mi. on Cusseta-Buena Vista Rd., State Rte. 26 relocation, Chattahoochee and Marion Counties. BA 4/19/61, CA 4/14/61. CD 4/11/61, under LB.

▲† **Southern Engineering Constr. Co.**, 2650 Cherry Lane, Long Beach, Calif., CA **$2,885,882**, 10 DOCK A/C FUEL SYSTEM MAINTENANCES, etc., Robins Air Force Base, INV. 33-600-61-163, MACON, GA. Aeronautical Systems Center, Wright-Patterson Air Force Base, Ohio. CD 4/13/61, under LB.

▲ **ALABAMA**—State Hy. Dpt., Montgomery, Zone 4, Bids opened 4/21, ROADS,

Ala.—**Robert R. Dunn Constr. Co.**, Troy, Ala., LB **$2,524,617**, 8.691 mi. base and conc. pave. from Sepulga River NE to Ala. 106 on Inter. Rte. 65, Butler Co.; LB **$110,327**, 9.656 mi. Base and bit. from Ala. 10 N. to near Aimwell and part of Sweetwater-Half Acre Rd., Marengo Co.;

Ala.—**Clyde O. Mitchell**, 2890 35th Ave. N., Birmingham, Ala., LB **$1,022,673**, grading and bit. pave. and bridges from Dillingham St. in Phenix City S. to Brickyard Rd. and from near US 431 E. to Chattahoochee River, Russell Co. CD 4/6/61.

▲† **Dravo Corp.**, Dravo Bldg., Pittsburgh, Pa., CA **$2,339,745**, POWER HOUSE COFFERDAM and part of Barrier for Barkley Dam, Lyon Co., CIVENG-40-058-61-18, KENTUCKY and TENNESSEE. U. S. Eng., P. O. Box 1070, Nashville 2, Tenn. BA 4/12. CD 4/19/61, under LB.

BUILDINGS—LB & CA

▲ **Harry B. Graham Constr. Co.**, P.O. Box 47, Ashland, Va., CA **$2,473,700**, 4 story, 85,000 sq. ft. HOSPITAL, FRANKLIN, VA. Southampton Memorial Hospital, Franklin, Va. BA 3/21/61. CA 4/20/61. CD 3/23/61.

▲ **Hunt Constr. Co., Inc.**, 3505 Roxboro Rd., Durham, N. C., CA Est. **$2,000,000**, Fort Mill SHOPPING CENTER, LYNCHBURG, VA. Andy Karres & J. C. Chris, c/o Thurmond Realty Co., 801 Church St., Lynchburg, Va. CD 10/14/60.

▲† **Samuel Rothberg & Assocs.**, 575 Peachtree St. N.E., Atlanta, Ga., LB Est. **$2,000,000**, 188,000 sq. ft. OFFICE BLDG. for U. S. Internal Revenue Service, CHAMBLEE, GA. General Services Administration, 50 7th St. N.E., Atlanta, Ga. BA 4/21/61. CD 4/6/61.

▲ **Fred Howland, Inc.**, 1451 NW 20th St., Miami, Fla., LB **$3,318,300**, (7 bidders), East Ridge RETIREMENT VILLAGE, between SW 190th St. and 197 St., west of Odd Cutler Rd., MIAMI, FLA. The Lutheran Senior Citizens Foundation, Inc., c/o Steward Skinner Assocs., archts., DuPont Plaza Center, Miami, Fla. BA 4/18. CD 4/4/61.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ **Ill., Chicago**—BA 5/17—Dpt. Purchases, City Hall, Zone 2, No. 80.68-61-5, ELEVATED HY. STRUCTURE, South Rte. Expressway, and 28th Pl., $2,270,000; No. 80.68-61-6, STRUCTURAL STEEL for elevated hy. structure South Rte. Expressway and 28th Pl., $2,070,000. CD 2/19/60, under Streets and Roads.

BUILDINGS—BA

▲ **Ind., South Bend**—BA 8/22—Notre Dame University, South Bend, 13 story, limestone, brick, LIBRARY, $7,500,000. Ellerbe & Co., 333 Sibley St., St. Paul, Minn., archt. CD 9/15/60.

▲† **Wis., Madison**—BA 5/18—Base Procurement Office, Bldg. 2505, Truax Field, 280 FAMILY ARMED SERVICES HOUSING, Truax Field, ENG-47-602-61-28. CD 2/1/61, under LB. CD 2/1/61.

▲ **Ill., Great Lakes**—BA 5/25—Dist. P. Wks. Office, Ninth Naval Dist., Bldg. 1-A, 108 unit CAPEHART FAMILY HOUSING, U. S. Naval Training Center, NBy (CH) 35705, Spec. 35705/61. Plans deposit $100. CD 3/14/61.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., State Depts. Bldg., Columbus, Zone 15, ROADS,

O.—**Allegheny Contracting Industries, Inc.**, 801 Bingham St., Pittsburgh, Pa., CA **$6,989,947**, Type T 71 and structures, 4.181 mi. State Rte. 2, Section 28.16, State Rte. 525, Section 0.00, I 90-1(19) 15, U 329(19) City of Euclid (City of Wickliffe) (Village of Willoughby Hills), Proj. 148 Cuyahoga and Lake Counties;

O.—**National Engineering & Contracting Co.**, 1968 W. 3rd St., Cleveland, O., **$2,547,124**, Type T 71 and structures, State Rte. 3, Section 16.93, I 70-6(5)99 City of Columbus, Proj. 149, Franklin Co.;

O.—**Nick Cenci & Sons, Inc.**, 844 N. Cassady Ave., Columbus O., CA **$763,786**, Type T 71 and structure 1.6888 mi. US Rte. 21, Section 12.36, US Rte. 22, Section 9.90, I-77-2(4)48, Cambridge Twp. Proj. 151, Guernsey Co.;

O.—**Rhoten Constr. Co.**, 16 E. Broad St., Columbus, O., CA **$598,900**, Type T 35, 6.878 mi. State Rte. 202, Sections (0.00-5.07) 8.73, S 129(2) Wayne and Bethel Twps Proj. 155, Miami and Montgomery Counties;

O.—**J. R. Savage**, 770 Woodbury Ave., Columbus, O., CA **$773,987**, Type T 35 1.991 mi. US Rte. 22, Section 13.27, City of Steubenville and Cross Creek Twp., Proj. 164, Jefferson Co. Grand total $11,-673,744. BA 4/4/61. CD 4/13/61, under LB.

▲ **ILLINOIS**—Dpt. P. Wks. & Bldgs. Div. Hys., Centennian Bldgs., Springfield, Bids opened 4/21, ROADS,

Ill.—**Arcole Midwest Corp.**, 3225 Main St., Evanston, Ill. LB **$836,258**, (3 bidders), guard rail constr. 14.55 mi. Edens Expressway in and north of Chicago, Cook and Lake Counties; LB **$1,773,638**, (11 bidders), paving Harlem Ave., FA 42 and paved ramps pumping station and frontage roads, 99th St., Chicago, Cook Co.;

Ill.—**Standard Paving Co.**, 308 W. Washington St., Chicago Ill., LB **$2,538,695**, (8 bidders), dual paving 5.93 mi. FAI 80, ramps from west of Business US 51, easterly, LaSalle Co.; LB **$1,875,890**, (9 bidders) dual paving 5.7 mi. FAI 80 from east of Ill.82 easterly, Henry Co.;

Ill.—**Parro Constr. Co.**, 703 E. University St., Urbana, Ill. and **McMahan Constr. Co.**, Rochester, Ind., LB **$1,529,002** (5 bidders), paving, incidental work for interchanges FA 13 north of Lawrenceville, Lawrence Co.,

Ill.—**Triangle Constr. Co.**, 480 N. Evergreen St. Kankakee, Ill., LB **$810,517**, (2 bidders), paving, widening resurf. SBI 150 between Grimsby and Cora, Jackson Co. CD 4/6/61.

▲ **Malan Constr. Corp.**, Lee and Higgins Rd., Des Plaines, Ill., CA **$4,357,000**, HEATING and REFRIGERATING PLANT, 80.85-60-132, O'Hare Airport, Park Ridge, CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. BA 4/3/61, CA 4/18/61. CD 4/7/61, under LB.

▲ **MICHIGAN**—State Hy. Dpt., 732 Mason Bldg., Lansing, Bids opened 4/18, ROADS,

Mich.—**C. J. Rogers**, 148346 Grand River, Detroit 27, Mich.; **Cooke Contr. Co.**, 1116 Penobscot Bldg., Detroit 26, Mich., and Jutton-Kelly, 13240 Alber Dr., Dearborn, Mich., LB **$3,196,206**, ½ mi. Chrysler Freeway from Alexandrine north to Warren, incl. bridges at Warren and Canfield and utility alterations;

Mich.—**C. A. Hull, Inc.**, 2 Barbour Terrace, Bloomfield Hills, Mich., and **Walter Toebe**, P.O. Box 761, Lansing 3, Mich., LB **$2,718,842**, 1 mi. preliminary work on John Lodge Freeway extension from Seven-Mile Rd. north to Greenfield, incl. service roads, alterations to sewers, water mains and lighting;

Mich.—**A. Lindberg & Sons**, Box 134, Ishpeming, Mich., LB **$2,723,000**, 4.3 mi. US 23 freeway from Willis Rd. north to Interstate 94 south of Ann Arbor, incl. interchange at US-112, grade sep. at Bemis Rd. and some of connecting ramps for US-23 and I-94 interchange, Washtenaw Co. CD 4/4/61.

BUILDINGS—LB & CA

▲ **L. C. Homes, Inc.**, 3083 Shadycrest Dr., Cincinnati, O. Owner Builds, **$11,500,000**, 670 one floor, split-level, 2 story brick veneer HOUSES, off Hamilton Ave., MOUNT HEALTHY, O. Pease Woodwork Co., 900 Forest St., Hamilton, O., archt. J. S. Wald & Assocs., North Bend Rd., Cincinnati, O., engrs.

▲ **Westinghouse Electric Corp.**, 3 Gateway Center, Pittsburgh, Pa., CA Total est. **$10,000,000**, 560,-000 kw TURBINE GENERATOR, Joliet Power Station, JOLIET, ILL. Commonwealth Edison Co., 72 W. Adams St., Chicago, Ill.

▲ **City of Madison**, City Hall, Madison, Wis., rejected bids Mar. 7, CIVIC CENTER and AUDITORIUM, MADISON, WIS. LB **$6,980,000**. CD 3/15/61, under LB.

▲ **Becker Constr. Co., Inc.**, 7701 W. Blue Mount Rd., Milwaukee, Wis., LB **$2,827,000**, (9 bidders), STATE OFFICE, MILWAUKEE, WIS. State Bldg. Comm. Capitol Bldg., Madison, Wis. BA 4/19/61. CD 3/31/61;

Zien Plumbing & Heating Co., 4450 N. Oakland Ave., Milwaukee, Wis., LB **$793,874**, heating, ventilating, plumbing contracts for STATE OFFICE, (Milwaukee, Wis.);

Staff Electric Co., 1659 N. Jackson St., Milwaukee, Wis., LB **$548,280**, (5 bidders), electric contract for STATE OFFICE (Milwaukee, Wis.).

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

▲† **South Dakota**—BA On Or About 6/29—U. S. Eng., 6012 U. S. Post Office & Court House, Omaha 2, Neb., rein.-con. SPILLWAY STRUCTURE, 450 ft. between abutments with the abutments extending an addn. 300 ft. on either side of spillway, Oahe Reservoir, ENG-25-066-61-119, $6,000,000. CD 9/30/60.

HEAVY CONSTRUCTION—LB & CA

▲ **SOUTH DAKOTA**—State Hy. Dpt., Office Bldg., Pierre, bids opened 4/18, ROADS,

S. D.—**Brownlee Constr. Co., Inc.**, Madison, S. D., LB **$657,126**, (12 bidders) grading, subbase, etc., 10.034 mi. SD 79 from Rapid City, F 019-3(1), Pennington Co.; LB **$690,278**, (15 bidders), grading, etc., 9.214 mi. on I 90 from 1 mi. E of Box Elder East, I 90-2(14) 68, Pennington Co.;

S. D.—**Northwestern Eng. Co.**, 1311 St. Joe St., Box 1392, Rapid City, S. D., LB **$2,689,111**, (6 bidders), concrete pvt., 9.412 mi. I 90 from 4 mi. East of Wicksville east, I 90-2(9)77, Sec. No. 2, Pennington Co. CD 3/14/61.

▲ **OKLAHOMA**—State Hy. Dpt., Capitol 5, Oklahoma City Bids opened 4/21, ROADS,

Okla.—**Austin Contg. Co.**, 1000 Singleton Blvd., Dallas, Tex., LB **$1,667,863**, est. $1,705,011, (6 bidders), c. conc. pavement 6.939 mi. I 35 south and west of Blackwell, Kay Co.;

Okla.—**Peter Kiewit & Sons Co.**, SE Station, Wichita, Kan., LB **$855,054**, est. $1,144,189, (8 bidders), stab. aggreg. base, b. conc. surf. 3.962 mi. US 69 at Colbert, Bryan Co. CD 4/3/61.

▲ **Harmon Constr. Co.**, 4335 W. Reno St., Oklahoma City, Okla., LB **$5,846,000**, est. $6,645,421 (10 bidders), AERO MEDICAL RESEARCH CENTER at Will Rogers Airport, OKLAHOMA CITY, OKLA. Oklahoma City Airport Trust Authority, First National Bank Bldg., Oklahoma City, Okla. Federal Aviation Agency, will lease. BA 4/19/61. CD 3/28/61.

▲ **TEXAS**—State Hy. Comm., Austin, ROADS,

Tex.—**Parker Constr. Co.**, P.O. Box 3506, Odessa, Tex., CA **$712,386**, grading, strs., st. sewer and conc. pvt., 1.181 mi. Hy. IH 10, I 10-1(51) and (49), El Paso Co. BA 4/15/61, CD 4/20/61, under LB;

Tex.—**Central Constr. Co., Inc.**, P.O. Box 12116, Dallas, Tex., and **Comewell Constr. Co., Inc.**, P.O. Box 11161, E. Grand Station, Dallas, Tex., CA **$612,263**, grading, strs., fl. base and surf. treatment and R.R. sepr., 3.593 mi. Hy. Loop 304, S 2338(2) and (3), Houston Co.;

Tex.—**Austin Bridge Co. & Austin Road Co.**, P.O. Box 1590, Dallas, Tex., CA **$3,104,758**, grading, strs., base

and conc. pvt. and shldrs., 3.805 mi. Hy. IH 35 E., I 35-E-6(89) and (41), Dallas Co.;

Tex.—**John F. Buckner & Sons,** Cleburne, Tex., and **Texas Bit. Co.,** P.O. Box 10365, Dallas, Tex., CA **$677,380,** lime treatment, fl. base and A.C. pvt., 19.649 mi. Hy. US 54, F 608(7), Hartley Co. Grand total $5,106,787. BA 4/15/61. CD 6/20/61, under LB.

▲† **C. L. Browning, Jr.,** 903 Basse Rd., San Antonio, Tex., LB **$5,399,923,** U. S. Air Force SCHOOL OF AVIATION MEDICINE, Phase II, Brooks Air Force Base, ENG-41-243-61-18B, SAN ANTONIO, TEX. U. S. Eng., P.O. Box 1129, Galveston, Tex. BA 4/20/61. CD 3/14/61.

▲ MONTANA—State Hy. Comn., Helena, ROADS,

Mont.—**Peter Kiewit Sons Co.,** 501 St. Johns Ave., Billings, Mont., CA **$2,849,376,** grade, aggregate surf., concrete pavement plant mix bit. surf. 12.5 mi. Interstate 94 from Miles City northeasterly; and 0.84 mi. from Miles City east; Custer Co.;

Mont.—**Untied Paving Co., Inc.,** RFD 4, Spokane, Wash., CA **$252,739,** widen, aggregate surf., plant mix. bit. surf. 7.24 mi. Pablo-Kalispell Rd., Flathead Co.;

Mont.—**Bud King Constr. Co.,** Missoula, Mont., CA **$228,546,** grade, aggreg. surf., road mix. bit. surf., build 173 ft. bridge and 196 ft. bridge on 1.21 mi. Conner cutoff road, Ravalli Co.;

Mont.—**Asphalt Constr. Co.,** Missoula, Mont., CA **$92,576,** aggreg. surf., plant mix. bit. surf. seal and cover 1.422 mi. Missoula Streets, Missoula Co.;

Mont.—**Northern Improvement Co.,** 633 First Ave. North, Fargo, N. D., CA **$165,351,** grade, cement stabilized base, plant mix bit. surf. from Baker extending 1.5 mi. east, Fallon Co. Grand total $3,588,588. BA 4/19/61, CA 4/19/61. CD 4/5/61.

▲† **Morrison-Knudsen, Inc., Kaiser Co., Perini Corp., Walsh Constr. Co., and F & S Contg. Co.,** 319 Broadway Ave., Boise, Idaho, CA **$39,809,359,** est. $45,752,318, YELLOWTAIL DAM and POWERPLANT, incl. arch-type concrete dam approx. 520 ft. high and approx. 1,450 ft. long at crest; 28 ft. concrete-lined diversion tunnel approx. 860 ft. long; spillway consisting of inlet channel, intake structure, concrete-line 32 ft. diameter tunnel, and stilling basin; powerplant and outlet structures at foot of dam to accommodate four 50,000 kilowatt generating units driven by 70,000 horsepower hydraulic turbines, Yellowtail Unit, Montana-Wyoming Lower Bighorn Division Missouri River Basin Project, 45 mi. southwest Hardin, Bighorn Co., Spec. No. DC-5525, MONTANA. Bureau Reclamation, Dpt. Interior, New High School Gymnasium, Hardin, Mont. BA 4/11/61. CD 4/14/61, under LB.

BUILDINGS—LB & CA

▲ **G. L. Tarlton Contg. Co.,** 5500 West Park Ave., St. Louis 10, Mo., CA **$3,100,000,** two 12 story APARTMENTS, Laclede Ave. east of Grand Blvd., ST. LOUIS, MO. St. Louis Redevelopment Corp., 411 N. 7 St., St. Louis 1, Mo. BA 5/19/60, CA 4/18. CD 6/6/60, under LB.

▲ **Tom Bolton & Associates,** 7531 Westwood Drive, Dallas, Tex., CA $2,400,000, HOTEL, CABANAS, RECREATION, Eisenhower State Park, Lake Texoma, DENISON, TEX. State of Texas, State Park Board, Main Admin Bldg., Austin, Tex. CD 5/29/52.

▲ **Geo. M. Underwood, Jr. & Lindsay Embry,** 10340 Gaywood St., Dallas, Tex., Owner Builds, **$3,840,000,** $1,000,000 1st year, 2 years to complete, 142 DWELLINGS, Richardson Hgts., RICHARDSON, TEX.

FAR WEST

HEAVY CONSTRUCTION—LB & CA

▲ WASHINGTON — State Hy. Comn., Transportation Bldg., Olympia, BRIDGE,

General Constr. Co., 3840 Iowa St., and **Manson Constr. & Engineering Co.,** 5209 E. Marginal Way, both of Seattle, Wash., CA **$3,518,767,** approaches to Second Lake Washington Bridge, King Co. BA 4/18/61. CD 4/20/61, under LB.

▲ CALIFORNIA—State Div. Hys., 120 So. Spring St., Los Angeles, Bids opened 4/20. ROAD,

Riha Constr. Co. & C. W. McGrath, Inc., 5429 University Ave., San Diego, Calif., LB **$3,897,623** (6 bidders), grading, paving to constr. 5.1 mi. 4 lane freeway on Sign Rte. 78 between 1 mi. west of Vista and Rancho Santa Fe Rd., San Diego Co. CD 3/15/61.

▲† **Peter Kiewit Sons, Inc.,** 415 Kieways, Arcadia, Calif., LB **$2,459,513,** est. $1,999,474, (4 bidders), San Gabriel River CHANNEL IMPRVT., 7th St. to Pacific Ocean, Long Beach, CIVENG-04-353-61-18, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. BA 4/20. CD 3/24/61.

BUILDINGS—LB & CA

▲ **Stolte, Inc.,** 501 N. Virginia St., Reno, Nev., CA **$2,490,000,** ENGINEERING and NUCLEAR BLDG., rein.-con. Class C, Type II constr., RENO, NEV. University of Nevada, 201 Fall St., Carson City, Nev. BA 3/9/61. CD 3/16/61, under LB.

▲ **Diverco Constructors,** 10238 Lakewood Blvd., Downey, Calif., LB **$2,288,000,** est. $2,000,000, (12 bidders), Proj. 630, 3 story, rein.-con. HEADQUARTERS, 1111 Sunset Blvd., LOS ANGELES, CALIF. Metropolitan Water Dist. of Southern California, 306 W. 3 St., Los Angeles, Calif. BA 4/19. CD 2/27/61.

AMERICANS ABROAD

HEAVY CONSTRUCTION—BA

Thailand—BA in July—Royal Irrigation Dpt., Kingdom of Thailand, Bangkok, furnishing, del. either f.o.b Contractor's shipping point or cif Bangkok Wharf, (1) synchronous condenser, 50/60 mva, 13,800 volts, 3-phase, 50 cycle, hydrogen cooled, outdoor type with excitation control and voltage regulating equipment complete with all accessories and spare parts; (2) three (3) power transformers, 15,000/20,000 kva, OA/FA ratings, singlephase, 50 cycles, outdoor, 69-13.2 kv complete with tank-mounted lightning arresters, insulating oil, accessories, spare parts and low voltage taps for corner of the delta starting of the synchronous condenser for the TRANSMISSION SYSTEM, Yanhee, Multipurpose Project, Inv. Bids No. YS 3-6. Each request must be accompanied by check or money order in amount of U. S. $20 for each copy of the contract documents requested. Engineering Consultants, Inc., 1901 South Navajo St., Denver 23, Colo., U. S. A., engr.

BUILDINGS—BA

▲ **Iraq, Baghdad**—BA 8/1—Tender Committee, Ministry of Works & Housing, Baghdad, Phase I, 19 story OFFICE, FACULTY TOWER, incl. main entrance and arch, roads, earth dike along river bank and grading, University of Baghdad. Plans deposit $196. Walter Groulus Assocs., 63 Brattle St., Cambridge, Mass., U.S.A., archts. CD 12/1/59.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Kan., Hutchinson**—City, City Hall, WATER SYSTEM. **$3,018,016.** To go ahead 1965.

SEWERS, WASTE DISPOSAL

▲ **La., Hahnville**—St. Charles Parish Police Jury, (P-La-3075) SEWAGE FACILITIES, incl. COLLECTION SYS. and TREATMENT PLANT. **$2,338,000.** deLaurel & Moses Engrgs., Inc., 929 Howard Ave., New Orleans, Zone 12, consult. engr.

▲ **Mo., St. Joseph**—City, City Hall, defeated **$3,360,000,** bonds Apr. 11, SEWER EXTENSION. CD 2/9/61.

▲ **Mo., St. Joseph**—City, City Hall, voted **$5,055,000** bonds Apr. 11, SEWAGE TREATMENT PLANT. Black & Veatch, 1500 Meadow Lake Parkway, Kansas City 14, Mo., consult. engrs. CD 2/9/61.

▲ **Mo., St. Louis County**—Metropolitan St. Louis Sewer Dist., 2000 Hampton Ave., St. Louis, Zone 10, 12 mi. up to 6 ft. SANITARY TRUNK SEWERS, Gravois Creek Subdistrict. **$4,750,000.** Sverdrup & Parcel & Assocs., Inc., 915 Olive St., St. Louis 1, Mo., consult. engr. Bids for first section soon. CD 9/7/60.

▲ **N. Y., Buffalo**—Erie County Sewer Agency, County Hall, plans by Krehbiel & Krehbiel, 1868 Niagara Falls Blvd., Tonawanda, and Cherry & Preble, 87 W. Tupper, Buffalo, SANITARY SEWER DISTRICT for Towns of West Seneca, Orchard Park and Hamburg and Village of Orchard Park. **$2,800,000.** CD 6/6/60.

BRIDGES

▲ **Ontario and Quebec**—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., Dpt. P. Wks., Parliament Bldgs., Toronto, Ont. Dpt. P. Wks., Parliament Bldg., Quebec City, Que., 1,600 ft. 6-lane BRIDGE across Ottawa River joining Ottawa, Ont. and Hill Que. **$12,000,000.** A. B. Sanderson & Co., Ltd., 1200 West St., Vancouver, consult. engrs. for federal govt. Beauchemin-Beaton-LaPointe, 6655 Cote des Neiges Rd., Montreal, Que., consult. engrs. of Province of Quebec. Laughlin, Wyllie & Ufnal, 53 Kipling Ave. S., Islington, Ont., consult. engrs. for Province of Ontario. CD 3/10/61.

STREETS AND ROADS

▲ **Calif., Sunnyvale**—City, City Hall, voted bonds, STREETS and HIGHWAY IMPRVS. **$2,500,000.**

▲ **MONTANA**—State Hy. Comn., Helena, ROADS,

Silver Bow and Jefferson Counties—26 mi. from jct. Interstate 90 and 15 east of Butte to 5.5 mi. east Counties line, 15.8 mi. to Whitehall and 4.7 mi. to U.S. 10. **$12,713,000** (incl. $955,000 for bridges). Meissner Engineers, Inc., 300 West Washington St., Chicago, Ill., consult. engr.

▲ **PENNSYLVINA**—Pa. Hys. Dpt., 506 North Office Bldg., Harrisburg, ROAD,

Mercer & Lawrence Counties—9 mi. sect. Pittsburgh-Erie Expressway, Interstate 79, between point 4,300 ft. north of TR 108, Lawrence County, to proposed Interchange with Keystone Shortway, Interstate 80, in Mercer Co. **$7,500,000.** Grof & Myers, Inc., 1824 N. 4th St., Harrisburg, consult. engrs. CD 11/17/58.

EARTHWORK, WATERWAYS

▲ **La., Hahnville**—St. Charles Parish Police Jury, (P-La-3076) DRAINAGE FACILITIES, incl. enlarging canals, along Mississippi River. **$2,978,200.** deLaurel & Moses Engrgs., Inc., 929 Howard Ave., New Orleans, Zone 12, consult. engr.

AIRPORTS

▲ **Tex., Galveston**—Blue Water Fishing Pier Assn., P.O. Box 841, plans by Wyatt C. Hedrick, archt.-consult. engr., 5201 Fannin St., Houston, 1 mi. FISHING PIER, 30 ft. wide, concrete on concrete piling, **$2,500,000;** 1,000 ft. T-HEAD at seaward end of fishing pier, 5 ft. above mean tide, **$500,000.** CD 10/27/60.

UNCLASSIFIED

▲† **Kentucky and Tennessee**—Tennessee Valley Auth., New Sprankles Bldg., Knoxville, Tenn., 352 mi. TRANSMISSION CONNECTIONS, incl. two 161,000 volt transmission lines each to Bowling Green and Hopkinsville, Ky., and Nashville, Tenn., and one

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161,000 volt line to Clarksville, Tenn., for Paradise Steam Plant. **$22,800,000.**

▲ **Me., Rumford**—American Telephone & Telegraph Co., 195 Broadway, New York, N. Y., SATELLITE COMMUNICATIONS STATIONS, incl. 250 ton 94x177 ft. steel, aluminum structures, near here. **$7,000,000.**

▲ **N. J., Bayonne**—Intransit Terminals, Inc., 15 Moore St., New York 4, N. Y., 217 acre SHIPPING TERMINAL, incl. 6,850 ft. finger-type pier, 25 acres shed space. **$40,000,000.** Frederic R. Harris, 144 East 44th St., New York 17, N. Y., consult. engr.

▲ **N. Y., New York**—Dpt. Marine & Aviation, Battery Maritime Bldg., Zone 4, Proj. D-275, WHARF SHIPPING TERMINAL (Newsprint Shipping) between Gouverneur Slip and Jackson St., East River. **$2,598,000.** Tippetts-Abbett-McCarthy-Stratton, 375 Park Ave., Zone 22, engrs. Bowater Steamship Co. Ltd., lessee. To go ahead 1961. CD 5/4/60.

▲ **N. Y., New York**—Dpt. Marine & Aviation, Battery Maritime Bldg., Zone 4, Proj. D-277, 384,000 sq. ft. WHARF SHIPPING TERMINAL between Rutgers Slip and Gouverneur Slip, East River. **$6,200,000.** Tippetts-Abbett-McCarthy-Stratton, 375 Park Ave., Zone 22, consult. engrs. Belgian Lines, Inc., lessee. To go ahead 1961. CD 1/13/61.

▲ **Texas**—Permian Basin Railroad, Odessa, 77 mi. standard gauge RAILWAY LINE, Odessa to Seagraves, via Andrews and Seminole. **$7,000,000.**

PUBLIC BUILDINGS

▲ **Ark., Foreman**—City, City Hall, voted **$7,500,000** bonds Apr. 11, cement PLANT EXPANSION. Arkansas Cement Corp., Shannon Bldg., Little Rock, lessee. CD 3/27/61.

▲ **Calif., Los Angeles**—Bd. Educ., 1425 S. San Pedro St., plans by Austin, Field & Fry, 2311 W. 3 St., Carson HIGH SCHOOL, 22328 S. Main St., Torrance. **$4,035,000.** Bids July 1961. CD 12/1/60.

▲ **Calif., Los Angeles**—Los Angeles County, 501 Hall of Records, will not construct CIVIC CENTER GARAGE, Hill to Hope and 1st and 2nd Sts.; Spec. 1978. **$10,000,000.** Project abandoned. CD 7/14/59.

▲ **Calif., Upland**—San Antonio Community Hospital, 999 San Bernardino Rd., plans by Harnish, Morgan & Causey, 222 East "B" St., Ontario, 3 story, rein.-con. POWER PLANT, SHOPS ADDNS., remodeling existing bldgs., San Antonio Community Hospital. **$3,000,000.**

▲+ **Fla., Gainesville**—General Services Admin., 19th and F Sts. N.W., Wash., D. C., plans by Reynolds, Smith & Hills, 227 Park St., Jacksonville, U. S. POST OFFICE and COURTHOUSE. **$2,600,000.** CD 2/4/60.

▲ **Mass., Woburn**—City, City Hall, plans by Edward J. Tedesco, 15 Pleasant St., SENIOR HIGH SCHOOL ADDN., ALTERATIONS. **$3,500,000.** CD 1/13/61.

▲ **Mich., Detroit**—Bd. Educ., 1354 Broadway, Zone 26, two unit Eastern HIGH SCHOOL, E. Grand Blvd. between Vernor and Kercheval, **$7,500,000**, two unit Butzel JUNIOR HIGH SCHOOL, Van Dyke Ave., **$4,300,000.** CD 4/9/59.

▲ **N. J., Livingston**—Bd. Educ., 189 South Livingston Ave., referendum bonds and project May 11, JUNIOR HIGH SCHOOL. **$2,662,400.** Frederick A. Elsasser, 2013 Morris Ave., Union, archt. CD 4/17/61.

▲ **N. Y., Buffalo**—Bd. Educ., City Hall, plans by Stanley Podd, 361 Delaware Ave., Zone 2, SCHOOL 28 ADDN., 1515 South Park Ave. **$450,000;** plans by Clinton B. F. Brill, 220 Delaware Ave., Buffalo, N. Y., P. S. 67 addn. to convert to JUNIOR HIGH SCHOOL, Abbott Rd., **$1,000,000;** P. S. 67 ELEMENTARY SCHOOL, **$900,000.** plans by Sebastian J. Tauriello, 121 Jewett Parkway, Buffalo, N. Y., School 79 addn. to convert to Riverside JUNIOR HIGH SCHOOL. **$1,300,000;** ELEMENTARY SCHOOL 79, **$900,000.** preliminary plans by Highland & Highland, 522 Franklin St., Buffalo, N. Y., P. S. 81 addn. to convert to North Park JUNIOR HIGH SCHOOL, **$1,300,000.** plans by Anthony L. Carlino, 277 Delaware Ave., Buffalo, N. Y., JUNIOR HIGH SCHOOL, (Seneca-Bailey Section), **$2,900,000.** CD 12/27/55.

▲ **N. Y., Huntington Station**—Bd. Educ. UFSD No. 13, 31 Walt Whitman Rd., plans by James Van Alst, Main Rd., Centerport, Walt Whitman HIGH SCHOOL. **$3,698,000.** Enis Baskam, 9 W. Marie St., Hicksville, struc. engr. Albert Fentzlaff, Inc., 111 Broadway, New York, Zone 6, mech. engr. CD 10/24/60.

▲ **N. Y., Kings Park**—State Dpt. P. Wks., State Office Bldg., Albany, Zone 1, plans by Harry M. Prince, 101 Park Ave., New York, Zone 17, 8 story, 300-bed, steel frame, brick face MENTAL HOSPITAL, Kings Park State Hospital. Over **$5,000,000.** Tumarkin, Morgan & Emerman, 140 Nassau St., New York, Zone 38, consult. engrs. CD 2/20/58.

▲ **N. Y., Mineola**—Nassau Community College, c/o Frederick P. Wiedersum Assocs., archts., 65 Roosevelt Ave., Valley Stream, 80,000 sq. ft. CLASSROOM, OFFICES, LIBRARY, LABORATORIES, 12 acre, Stewart and Post Aves., Salisbury Area. **$3,000,000.** Clyde Alston, 397 Clinton St., Hempstead, mech. engr. Fraioli-Blum-Yesselman, 250 E. 43 St., New York, Zone 17, struct. engrs. CD 10/25/60.

▲ **N. Y., Plainview**—Bd. Educ. Central School Dist. No. 4, Jamaica Ave., defeated **$5,410,000** referendum Apr. 11, JUNIOR HIGH SCHOOL, east side Washington Ave. CD 3/30/61.

▲ **Tenn., Nashville**—Nashville Housing Authority, 701 S. 6th St. plans by Taylor & Crabtree, 1812 Broad-

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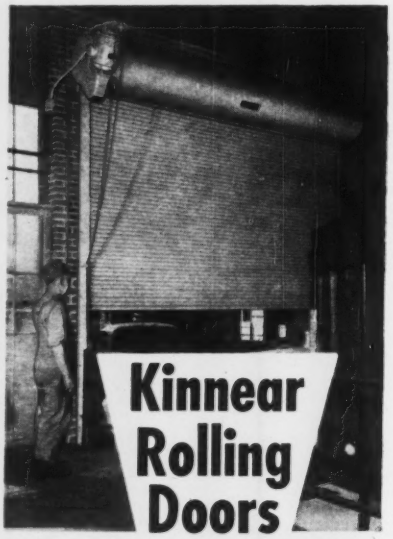

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way, 180 HOUSING UNITS FOR ELDERLY, Horton, Edgehill, 11th and 12th Aves., $2,000,000; plans by Woolwine, Harwood & Clark, Life and Casualty Tower, Nashville, 220 HOUSING UNITS FOR ELDERLY, 5th and Shelby Sts., $2,500,000.

COMMERCIAL BUILDINGS

▲ **Calif., Oakland**—1200 Lakeshore, Inc., 1401 1st Ave., plans by Simpson, Stratta & Assocs., archts.-engrs., 325 5 St., San Francisco, 16 story, concrete slab, stone Laketowers APARTMENT, with 3 story bldg. incl. boat dock, Lake Merritt. **$7,500,000.** CD 4/12/61.

▲ **Calif., Palo Alto**—Stanford University, Palo Alto, plans by John C. Warnecke, 111 New Montgomery St., San Francisco, 2 and 3 story, glass walls, UNDERGRADUATE LIBRARY, Escondido Rd. **$4,870,000.**

▲ **Calif., San Francisco**—Albert-Lovett Corp., 305 El Cerrito Plaza, El Cerrito, Calif., plans by Hammarberg & Herman, 303 El Cerrito Plaza, El Cerrito, Calif., 17 story, 10,600 sq. ft., concrete, steel frame, glass The Fontana East COMMUNITY APARTMENT, 150 parking space. **$3,750,000.** Simpson & Stratta, 325 5 St., consult. engrs. CD 3/18/60.

▲ **Calif., Sausalito**—Kurt Heath & Allied Grocers, 312 Miller Ave., Mill Valley, plans by Campbell & Wong, 737 Beach St., San Francisco, SHOPPING CENTER and OFFICE, Marinship Area. **$2,500,000.** Kenneth Frost Assoc., 1610 Tiburon Blvd., Tiburon, consult. engrs.

▲ **Ill., Niles**—Goldblatt Bros., Inc., 333 S. State St., Chicago, Zone 4, DEPARTMENT STORE. **$2,500,000.**

▲ **Ill., Springfield—Goldblatt Bros., Inc.,** 333 S. State St., Chicago, Zone 4, DEPARTMENT STORE. **$2,500,000.** Bids in Summer.

▲ **Ind., South Bend**—Goldblatt Bros., Inc., 333 S. State St., Chicago, Zone 4, DEPARTMENT STORE. **$2,500,000.** Bids in Summer.

▲ **Kan., Winfield**—William Newton Memorial Hospital, Winfield, HOSPITAL ADDN. **$2,400,000.**

▲ **Md., Bladensburg**—Capital Plaza, Inc., c/o Aubinoe & Berry, archts., 10215 Old Georgetown Rd., Bethesda, 300,000 sq. ft. REGIONAL SHOPPING CENTER, parking area, Defense Hy. and Washington-Baltimore Parkway. **$4,000,000.**

▲ **Mich., Mount Clemens**—Regional Shopping Center, Kenneth Sanborn, agt., 1404 S. Gratiot Ave. (First Unit), 30 unit SHOPPING CENTER, Gratiot Ave. and 15-Mile Rd., Clinton Twp. **$1,800,000.** Total est. $5,000,000-$6,000,000.

▲ **Mo., Clayton**—Syndicate, c/o Laclede Bond & Mortgage Co., 25 N. Brentwood Blvd., Zone 5, plans by Smith & Entzercth, archts., 8230 Forsyth Blvd., Zone 5, 13 story, 120 x 140 ft. rein.-con., faced precast concrete OFFICE, Hanley Rd. and Forsyth Blvd. **$5,000,000.** Bids early 1962.

▲ **N. Y., New York**—Irving Dimson, 131 East 17 St., Zone 3, plans by Philip Birnbaum, 12 East 48 St., Zone 17, 21 story, 100 x 155 ft. APARTMENT, 1185-1191 Second Ave. and 234-238 East 63 St. Over **$3,000,000.**

▲ **N. Y., New York**—Loew's Inc., 1540 Broadway, Zone 36, plans by Morris Lapidus, 139 E.56 St., 16 story HOTEL, Park Ave. (area E.59 to 65 Sts.), site not announced. **$25,000,000.**

▲ **O., Cleveland**—University Development Foundation, 2009 Adelbert Rd., Zone 6, FACULTY and STAFF CENTER behind Severence Hall, **$2,500,000.**

▲ **O., North Olmsted**—Heidi Homes, Inc., 25698 Yeoman Dr., Westlake, 134 HOMES, off Columbia Rd. **$3,000,000.** CD 3/6/61.

▲ **Va., Alexandria**—Community Builders, Inc., 1730 K St. N.W., Wash., D. C., plans by Corning, Moore, Elmore & Fisher, 1302 18th St. N. W., Wash., D. C., 271-unit Seminary Towers APARTMENT, Seminary Rd. **$3,000,000.**

▲ **Va., Falls Church**—Thomas H. Woods, Realtor, 99 Hillwood Ave., plans by Sheridan & Behm, 2030 16th St. North, Arlington, New Freedom APARTMENTS, incl. 76 car GARAGE Rte. 50 and Sleepy Hollow Rd. **$3,200,000.**

▲ **Va., Richmond**—Robious, Inc., c/o Julian B. Jacobs 212 Overlook Rd.; plans by Rawlings & Wilson, 1000 N. Thompson St., Richmond, and Marcellus Wright, 100 E. Main St., Richmond; Chesterfield (Bon Air) SHOPPING CENTER, Rte. 147, near here. **$2,500,000.** CD 3/23/61, under Larus Family, as owner.

▲ **Wash., Seattle**—Marfran Co., 500 Aurora Ave., plans by R. H. Peck, 1266 Mercer St., TOURIST DEVELOPMENT, incl. 5 story, motel, restaurant, shops, marina, swimming pool, site of Piers 50 and 51. **$4,000,000.**

▲ **N. S., Halifax**—Dalhousie University, Studley Rd., CENTRAL BLDG., MEDICINE SCHOOL **$2,000,000.**

INDUSTRIAL BUILDINGS

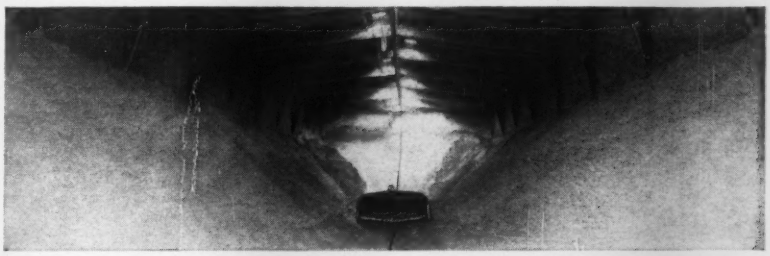
▲ **California**—Pacific Gas & Electric Co., 245 Market St., San Francisco, 12,500 kw. GENERATING UNIT, Geysers Geothermal Power Plant addn., Sonoma Co. **$2,200,000.** Bids 1961.

▲ **Calif., Lathrop**—Libby-Owens-Ford Glass Co., 811 Madison St., Toledo, O., 420 x 920 ft. steel, brick, GLASS FABRICATING PLANT to produce curved laminated glass, WAREHOUSE, BOILER PLANT, near here. **$10,500,000.**

▲ **Tex., Amarillo**—Linde Div., Union Carbide Corp., 270 Park Ave., New York, N. Y., 100 liters per hour liquid helium PLANT.

SAUERMAN NEWS briefs

SAUERMAN BROS., INC.,
632 South 28th Avenue, Bellwood, Illinois
Linden 4-4892



Self-Unloading Vessels

Sauerman DragScrapers provide efficient clean-up and low-cost cargo unloading capacities from 100 tph. (or less) to over 2000 tph. They are a component part of many ship unloading installations.

The systems are designed to suit the requirements of a particular vessel and are being incorporated in the construction of new self-unloaders as well as in the conversion of existing vessels.

DragScraper unloading allows maximum space for cargo stowage. The cargo rides low in the hold providing greater stability and increased carrying capacity over cargoes which are hoppered high.

Sauerman ship unloaders are economically handling rock, ore, sand, coal and cement. One man controls the entire operation from a convenient station overlooking the hold and away from any hazards of material or working area.

(Condensed from Marine Brochure MB-1)

Digging a Trench Under Water

Digging a trench across the Big Calumet River was economically handled by a ¾-yd. Crescent DragScraper used with a ½-yd. crane. The crane's hoisting line was used as a track cable for the DragScraper and single wheel carrier. This cable was deadended on the opposite shore.

To permit gravity return of the DragScraper, the crane was placed upon a built-up mound of dirt and the boom raised to its highest point. Spooling capacity of the crane's load drum was just enough to allow the DragScraper to dig the trench the width of the river. Depth of the trench was about 6 ft. at an average depth of 12 ft. below water.

(Condensed from Sauerman News No. 151)

Handling Phosphate Ore

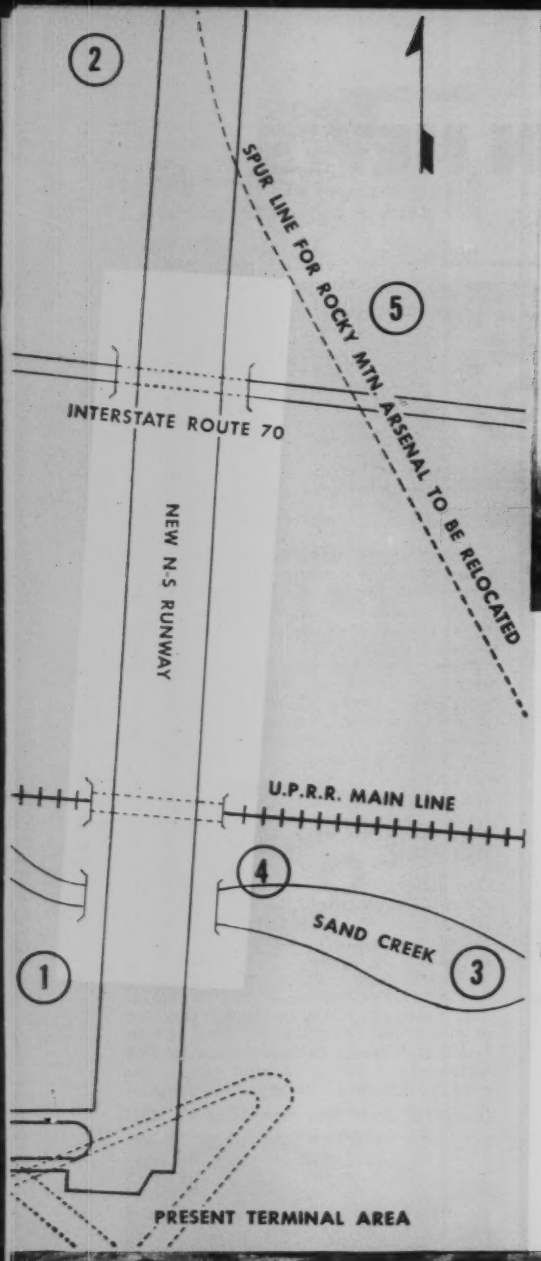
Ore concentrate is stockpiled and reclaimed as required to the foot of a bucket elevator by a Sauerman DragScraper Machine at a Southern chemical plant.

A self-propelled tail tower travels around the perimeter of the stockpile. The tower is shifted to change the line of operation. DragScraper haul length is 400 ft. The operator's station for the Sauerman hoist is located above the conveyors to give a clear view of the pile.

(Condensed from Sauerman News No. 151)

MORE NEWS AND INFORMATION

Issues of Sauerman News giving greater detail about the installations on this page are available on request. For full information, tell us your interest or requirements and ask for catalog. Contact Sauerman Bros., Inc., 632 S. 28th Ave., Bellwood, Ill.



①

◀ Refer to engineering sketch of project to locate action pictured: (1) Payscraper and TD-25's strip frozen soil from old dump area; (2) Payscraper units with "25" pushers cut drainage channel; (3) TD-25 bulldozer works near creek overpass site; (4) Power Unit pumps from Sand Creek to wet down ashy dump material; (5) Equipment grades near spur track that will be relocated.

Northwestern to build

Both Payscraper models have 4-speed power-shift torque converter transmissions—of the planetary type. Besides providing smooth shifting and speeds for every need, this torque converter gives automatic lock-up for direct, load-speeding mechanical drive in 2nd, 3rd, and 4th gears. "Northwestern's" Payscraper operators also increase production with rack-and-pinion power steering; positive air-braking; fast, complete power bowl-control.

②

With 835 turbocharged, power-shifted Diesel hp "harnessed"— 375 in the International Payscraper,® 230 in each TD-25 pusher—"Northwestern" heap-loads the big bowls with 34 cu. yd. in record time. The contractor highballs dirt on the big jet runway job with four 3-axle "495's," and three 2-axle "295's."

Engineering Co. uses 100% IH fleet new jet runway

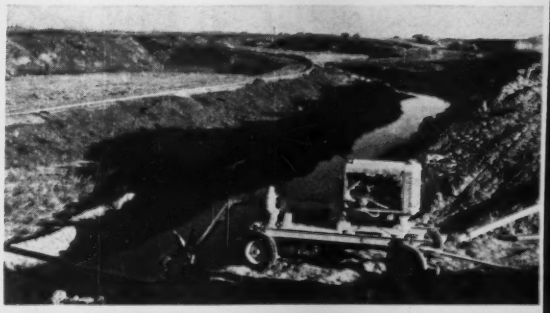
Northwestern Engineering Company will span Union Pacific main line tracks—Interstate Highway No. 70—and a rambunctious creek—to build the north-south jet runway at Denver's Stapleton airport.

To do this huge job, the contractor must make a fill as high as 30 feet—to be carried on reinforced concrete structures over railroad, superhighway, and creek. Moreover, he must relocate a railroad spur, and also replace the ash-like debris of an old city dump with solid fill material.

Northwestern's schedule calls for moving 4,123,000 cu yd of earth and completing the project in 400 days. And this 2.1 mile runway, that will handle the biggest and fastest jet aircraft, is being built from start to finish with International Construction Equipment.

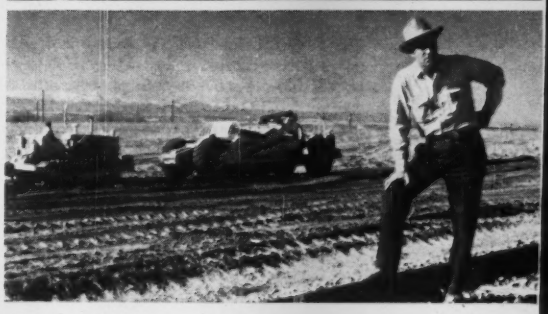
Prove the powerful performance reasons behind this up-and-coming contractor's equipment choice. Let your International Construction Equipment Distributor demonstrate!

④



This International 450 power unit is pumping water from Sand Creek through a sprinkler system — for wetting down old city dump debris, so the scrapers can load and remove this loose, dusty material from runway site.

⑤



"Chuck" Loser, Project Superintendent for "Northwestern," stands on spur railroad section which will be relocated in building the jet runway. In background, a 295 Payscraper and TD-25 tractor are at work on the $1,895,000 contract.

Six International TD-25's give "Northwestern" the bonus dozing and pushing capacity insured by Planet Power-steering, and Hi-Lo on-the-go power-shifting. Full-time "live" power on both tracks helps doze full blades, every pass. And torque converter "25's" speed up all four steps of the push-loading cycle.

③

International® *Construction Equipment*

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Illinois
A COMPLETE POWER PACKAGE

MIDDLE ATLANTIC

BUILDINGS—SLC

▲ **N. Y., New Castle**—International Business Machines Corp., 590 Madison Ave., New York, Zone 22, soon lets contract 250,000 sq. ft. OFFICE, Wenga Farm for General Products and Data Systems, IBM Div. $5,000,000. Skidmore, Owings, Merrill, 425 Park Ave., New York, Zone 22, archts. Alexander Potter Assocs., 50 Church St., New York, Zone 7, consult. engrs. Slocum & Fuller, 207 E. 32 St., New York, Zone 16, mech. engrs. Severud Elstad Krueger, 415 Lexington Ave., New York, Zone 17, struct. engr. CD 4/12/61.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—State Dpt. P. Wks., Alfred E. Smith State Office Bldg., Albany, Bids opened 4/27, ROADS, N. Y.—**Johnson, Drake & Piper Inc.**, New York 6, N. Y. LB $6,099,951.05, est. $7,356,000, (4 bidders), c. conc. pavement, 3.34 mi. Interstate Rte. Conn 590, Powerline Expressway Sect. 2, Contract 1, (Millersport Hy. to Main St.) Proj. I 290-1(41) Contract FIPLE 61-1, Erie Co.;

N. Y.—**Grove Const. Co., Inc., Andrew Calatpano Co., Inc.**, 313 W. 53rd. St., N. Y. 19, N. Y. LB $9,546,403, est. $12,589,000 (7 bidders), c. conc. pavement, o. conc., embankment, surcharge, plate girder, comp. beam, bridges equestrain underpass, overpass, simple beam, 4 level structure plate girder, 3.33 mi. Interstate Rte. Conn Clearview Expressway-(Hillside Ave. to 73rd Ave.) Van Wyck Expressway Extension (57th Ave. to Union Turnpike) Proj. EI 78-1(61) U 1085(19) Contract FICE 61-1, FAVWE61-1, Queens Co. CD 3/24/61.

BUILDINGS—LB & CA

▲ **Gerace & Castagna, Inc.**, 31 Dr. and 138 St., Flushing, N. Y., CA general contract Christ the King Diocesan HIGH SCHOOL, Metropolitan Ave. and 69 Sts., GLENDALE, N. Y. Brooklyn Diocesan Bldg. Office, 191 Joralemon St., Brooklyn 2, N. Y. Total est. cost $9,000,000. BA 4/17, CA 4/24. CD 3/27/61.

Moriarty & Moller, 249-11 Northern Blvd., Little Neck, N. Y., CA plumbing HIGH SCHOOL (Glendale, N.Y.);

Daniel J. Rice Jr., Inc., 41-50 38 St., Long Island City 1, N. Y., CA heating and ventilating HIGH SCHOOL (Glendale, N. Y.);

Mason, Nixon & Kennedy, Inc., 51 E. 42 St., New York 17, N. Y., CA electrical work, HIGH SCHOOL (Glendale, N.Y.).

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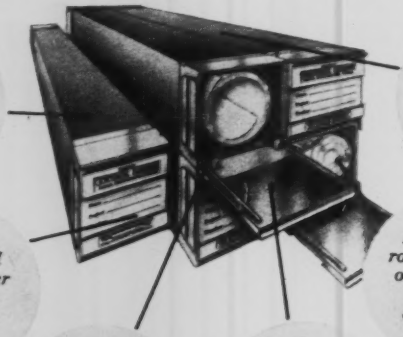

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▲ **Gulf Constr. Linwood Corp.**, 272 Sunrise Hy., Lindenhurst, N. Y., CA Est. $5,000,000, 280 one family HOMES, Colonial Springs Rd. east of Pinelawn Rd., Melville, HUNTINGTON, N. Y. Westwood Village Realty Corp., 3 S. Carroll Ave., Babylon, N. Y. Herman H. York, 90-04 161 St., Jamaica, N. Y., archt.

▲ **Auserehl & Son Contr. Corp.**, 95-40 157 St., Jamaica 33, N. Y., CA Est. $5,000,000, CENTRAL TELEPHONE OFFICE and COMMUNICATIONS SYS. for New York International Airport, JAMAICA, N. Y. New York Telephone Co., 140 West St., New York 7, N. Y. BA 4/18. CA 4/24. CD 3/28/61.

SOUTH

BUILDINGS—BA

▲† **Tenn., Memphis**—BA 6/13—Veterans Admin. Munitions Bldg., Wash., D. C., 1,000 bed HOSPITAL. $23,000,000. Eggers & Higgins, 787 United Nations Plaza, New York, N. Y., and Edwin A. Keeble Assoc., 200 Glen Echo Rd., Nashville, archts.-engrs. CD 3/13/56.

MIDDLE WEST

HEAVY CONSTRUCTION—LB & CA

▲ **William E. Schweitzer & Co.**, 2207 Dodge St., Evanston, Ill., LB $6,389,000, (9 bidders), No. 80-75-60-40A, SOUTHWEST INCINERATOR PLANT, 1400 Pershing Rd., CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. BA 4/25/61. CD 3/29/61.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

▲† **South Dakota**—BA 6/29—U. S. Eng., 215 N. 17th St., Omaha 2, Neb., rein.-con. SPILLWAY with 450 ft. between abutments with abutments extending 300 ft. on each side of spillway; concrete slab basin and apron extending downstream 300 ft. with 50 ft. high walls adjacent to basin, 8 tainter gates, 50 x 234 ft. with prestressed anchorage, 550,000 cu. yd. excav., 65,000 cu. yd. embankment, 90,000 cu. yd. concrete, 40,000 cu. yd. riprap and spalls, 2,000 tons reinforcing steel, Oahe Dam, ENG-25-066-61-119. $6,000,000. CD 4/24/61.

HEAVY CONSTRUCTION—LB & CA

▲† **Browning Constr. Co.**, P.O. Box 606, San Antonio, Tex., CA $5,399,919. U. S. Air Force SCHOOL OF AVIATION MEDICINE, Phase II, Brooks Air Force Base, ENG-41-243-61-18B, SAN ANTONIO, TEX. U. S. Eng., P.O. Box 1129, Galveston, Tex. BA 4/20/61. CD 4/26/61, under LB.

BUILDINGS—LB & CA

▲† **Contex Co.**, 4606 Greenville St., Dallas, Tex., LB $8,190,154 Base Bid (2 bidders), 500 units, CAPEHART HOUSING, Offutt Air Force Base, FORT CROOK, NEB. Base Procurement Office, Fort Crook, Neb. BA 4/25/61. CD 4/19/61.

FAR WEST

HEAVY CONSTRUCTION—LB & CA

▲† **General Electric Co.**, P.O. Box 2331, Denver 1, Colo., CA $8,007,798, GENERATORS for Glen Canyon Power Plant, Colorado River Storage Project, DS 5522, ARIZONA. Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo. BA 4/11/61, CA 4/21/61. CD 4/13/61, under LB.

CANADA

BUILDINGS—BA

▲ **Labrador, Carol Lake**—BA 5/15—Iron Ore Co. of Canada, 810 Cote de Liesse Rd., Montreal, Que., CONCENTRATING MILL, Carol Lake Mining Development. $6,000,000. Canadian Bechtel Ltd., 5595 Pare St., Montreal, Que., engrs.

FOREIGN

HEAVY CONSTRUCTION—BA

▲ **Australia**—BA 8/21—Snowy Mountains Hydro-Electric Authority, P.O. Box 322, Cooma North, New South Wales, Australia, 42,000 lin. ft. 20 ft. 4 in. x 20 ft. 8 in. horseshoe shaped Eucumbene Section, Contr. 20.004, and 39,000 lin. ft. 20 ft. 4 in. x 20 ft. 8 in. horseshoe shaped Island Bend Section, with three 16 ft. diam. shafts, one 300 ft. deep, two 400 ft. deep and a 6 ft. diam. steel lined shaft 400 ft. deep at Burrungubugge River, Contr. 20.045, for Eucumbene-Snowy TUNNEL. Plans deposit $22.50 per set. Bidding information may be obtained from Australian High Comr., Royal Bank Chambers, 100 Spark St., Ottawa, Ont., Canada, Australian Consulate-General, 153 Kearney St., San Francisco, Calif., U.S.A., Australian Consulate-General, International Bldg., Rockefeller Center, 636 Fifth Ave., New York, N. Y., U.S.A., and Liaison Officer, Snowy Mountains Hydroelectric Auth., c/o United States Bureau of Reclamation, Federal Center, Denver, Colo., U.S.A.

HEAVY CONSTRUCTION—LB & CA

▲ **NIGERIA**—Govt. of Nigeria, Lagos, BRIDGE, **Societe Dumez (Nigeria) Ltd.**, Lagos, Nigeria, CA Est. $14,000,000, bridge over Niger River between Onitsha and Asaba.

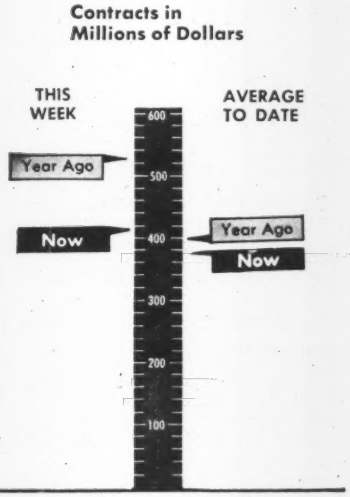
BUILDINGS—LB & CA

▲ **Elin-Union, 1-5** Volksgarten-Strasse, and **Waagner-Biro Aktiengesellschaft**, 70 Margaretenstrasse, both Vienna, Austria, CA Est. $12,500,000, Krabi STEAM POWER PLANT, THAILAND. Govt. of Thailand, Bangkok, Thailand.

(Proposal Advertisements see pp. 82 to 85)

Construction Scoreboard

This Week . . .



AMOUNT OF CONTRACTS LET

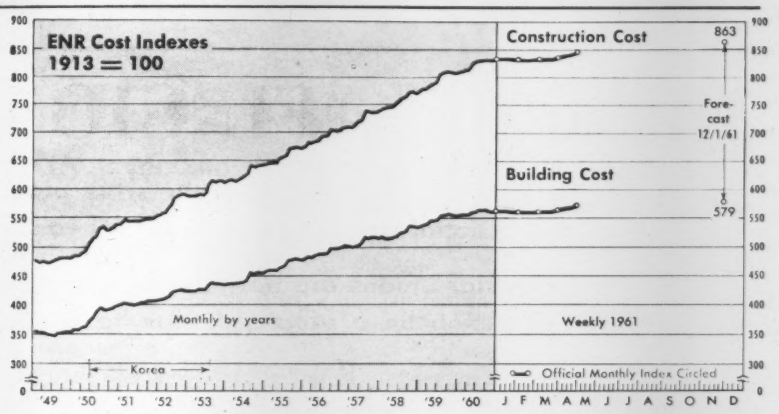
Contracts Awarded In 50 States By Type	This Week millions	Cum. 18 wks 1961	Chge '60-'61 %
All Heavy Construction	$418.8	$7,167.9	− 1
By Ownership			
PRIVATE	173.8	3,537.2	− 8
PUBLIC	245.0	3,630.7	+ 9
State & Municipal	191.9	2,790.5	+10
Federal	53.1	840.2	+ 5
By Type of Work			
PUBLIC			
Waterworks	5.6	136.6	−13
Sewerage	13.0	242.3	+29
Bridges*	14.3	204.8	−37
Highways	70.3	1,245.0	+24
Earthwork, Dams & Waterways	19.9	284.3	+24
Buildings:			
Excl. Housing	81.2	849.2	+ 7
Housing	20.4	254.4	+44
Unclassified	20.3	414.2	−13
PRIVATE			
Buildings:			
Mass Housing	84.8	1,558.2	−20
Commercial	56.7	782.2	+ 6
Industrial	20.2	1,041.6	+24
Unclassified	12.1	155.1	−54

*Includes Private bridges

NOTE Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

NEW CONSTRUCTION CAPITAL

	Week of Apr. 27 millions	Cum. 17 wks 1961	Chge '60-'61 %
Corporate Securities	$ 38.6	$ 857.7	− 9
State and Municipal:			
All Except Housing	27.9	2,045.9	− 7
Housing	3.9	26.1	+22
Federal Loans	10.4	69.4	+20
Federal Aid	....	0	−100
Total Nonfederal	$ 80.7	$2,999.2	− 7
Federal Appropriations:			
Projects in U. S.	....	1.0	−69
Outside U. S.	....	0	0
Total New Capital	$ 80.7	$3,000.2	− 7



ENR INDEXES (1913=100), 20-cities' average	Week of Apr. 27 1961	% Change from Mar. 30 1961	% Change from Apr. 28 1960
Construction Cost	847.32*	+1.2	+3.3
Building Cost	568.99*	+0.7	+2.0

*Official Monthly Index for May 1961

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

This Month . . .

WAGE RATES, 20-cities' average	May 1961	% Change from Apr. 1961	% Change from May 1960
Common	$2.815	+1.4	+5.5
Skilled (average 3 trades)	4.163	+0.7	+4.7
Bricklayers	4.374	+0.7	+4.1
Structural Ironworkers	4.227	+0.8	+5.6
Carpenters	3.887	+0.6	+4.4
Equipment operators (average three types)	3.791	+0.8	+5.2
MATERIAL PRICES, 20-cities' average			
Structural Steel (average 3 mills), per cwt	5.50	0	0
Lumber, 2x4 Fir, per M fbm	119.18	+1.6	−1.7
Lumber, 2x4 Pine, per M fbm	110.17	+1.0	−1.4
Cement, bulk, per bbl	4.04	0	+0.7
Sand, per ton	2.340	0	−5.2
Ready-mixed concrete, per cu yd	14.20	−0.4	−0.7
Gypsum sheathing, ½″x2′x8′, per Msf*	62.25	0	−1.6
Fiber board sheathing, ½″ sq. ed., per Msf*	70.66	0	−3.9
Mineral wool insulation, 3′ batts, per Msf*	67.41	−0.4	−1.8
Crushed stone, 1½″, per ton, CL	2.708	0	+1.7
Concrete blocks, sand/gravel, 8″x8″x16″, each*	0.2263	0	−4.6

Latest Month . . .

	Apr. 1961	Mar. 1961	Apr. 1960
Brick, common per M	41.15	0	+1.1
Lime, hydrated finishing, per ton, CL	39.68	−0.6	+0.8
Structural clay tile, 3x12x12″, per M, 2,000 up*	193.09	+0.5	−2.6
Vitrified clay sewer pipe, std 12″, per ft	1.451	+2.7	+1.5
Concrete sewer pipe, 12″, per ft	1.422	0	−1.7

*Delivered, trucklots

ENR INDEX REVIEW

	Construction Cost		Building Cost		Volume	
1960	**1913=100**	**1949=100**	**1913=100**	**1949=100**	**1913=100**	**1949=100**
Mar	813.26	170.48	555.16	157.81	533	154
Apr	814.78	170.80	555.98	158.04	695	201
May	822.58	172.44	559.57	159.06	610	176
June	826.64	173.29	561.02	159.48	784	227
July	829.33	173.85	562.63	159.93	682	197
Aug	830.18	174.03	562.17	159.80	631	182
Sept	830.92	174.19	562.79	159.98	603	174
Oct	829.58	173.90	561.45	159.60	591	171
Nov	830.09	174.01	561.11	159.50	609	176
Dec	830.61	174.12	561.50	159.61	503	145
1960 Average	**823.55**	**172.64**	**559.43**	**159.02**	**597**	**172**
1961						
Jan	834.32	174.90	562.91	160.01	557	161
Feb	834.27	174.89	562.93	160.02	464	134
Mar	834.16	174.87	562.89	160.01	519	150
Apr	837.58	175.59	565.19	160.66	598	173
May	847.32	177.62	568.99	161.74	...	...

Rift in the AFL-CIO Gets Wider

- **The building trades' interest in the situs picketing bill has sharpened the jurisdictional conflict over industrial construction work.**
- **The industrial unions are now unsuccessfully demanding immediate AFL-CIO action on a proposed plan to arbitrate inter-union disputes.**

A series of flare-ups in recent weeks between the AFL-CIO's craft and industrial unions has left the merged federation intact—at least for the time being—but still groping for a successful formula with which to solve its jurisdictional conflicts.

About the only firm results from the growing hostilities between the AFL-CIO's top two leaders, George Meany and Walter Reuther, and between its two powerful divisions: the Industrial Union Department and the Building and Construction Trades Department are these:

- The craft union effort to win legislation from this Congress to permit picketing of multi-employer construction sites is stymied for this session.
- Efforts to resolve the existing conflicts between the two union divisions by negotiation have been unsuccessful. The two groups have virtually agreed to disagree.
- The current AFL-CIO machinery to resolve the jurisdictional fights, particularly over construction work in industrial plants, is being kept on the books with some renewed effort to make it work. However, no new plans are in the works.

The trouble started in mid-March when Mr. Reuther's industrial unions interrupted the building trades' legislative conference to advise they would no longer support the crafts in their long-sought goal to amend Taft-Hartley rules on picketing construction sites. The IUD's secretary-treasurer James B. Carey followed this up in testimony before a House labor subcommittee spelling out opposition to the legislation as it was proposed by the building trades.

International Association of Machinists President Al J. Hayes followed this with his own suggested amendments to the legislation. This split in labor's ranks completely cooled off the luke-warm attitude Congress had already taken toward the legislation this year.

Then, the AFL-CIO's industrial unions met in a formal "gripe" session to protest the federation's inactivity in tackling the jurisdictional problems. Led by Mr. Reuther, some 30 industrial union leaders took their complaints directly to Mr. Meany. The face-to-face meeting resolved nothing.

In fact, it ended with Messrs. Meany and Reuther renewing accusations that the other was responsible for the federation's internal difficulties.

Most of the disagreement centered on a proposal adopted by the AFL-CIO's 1959 National Convention in San Francisco. The convention approved in principle a plan for arbitration of the jurisdictional conflicts and named a five-man committee, headed by Mr. Hayes, to work out the details.

Mr. Reuther accused Mr. Meany of sitting on the Hayes committee, in effect preventing an arbitration plan from coming before the AFL-CIO Executive Council. Mr. Meany denied this, though he confirmed that leaders of the building trades unions were opposed to outright arbitration unless certain safeguards could be worked out.

Arbitration sought by the industrial unions was to be the terminal point for jurisdictional arguments that could not be settled through the federation's existing machinery. This machinery, known as the Miami agreement, provides for industrial and craft teams to negotiate case-by-case agreements and, where these fail, for the AFL-CIO to come up with the answer.

However, in half a dozen cases where the council has made a decision on which union should get the work, the defeated union has refused to abide by the ruling. Since then, other troubles have broken out—the United Steelworkers and Sheet Metal Workers are in a heated fight for recognition from the Carrier Corp. in Syracuse, N. Y., and the International Brotherhood of Electrical Workers and the Communications Workers are feuding over jobs rights in Chicago.

Behind these and other specific clashes is a major fight between the industrial and craft unions over factory construction work. Though the Miami Agreement seeks to spell out the dividing lines between craft construction work and industrial union maintenance work, both sides are extending these lines. The industrial unions are seeking to promote no-contracting out with factory management to prevent craft union invasions; the crafts, in turn, are seeking industrial contracts to handle maintenance work.

The contest over factory construction jobs was the direct cause for the split over situs picketing legislation. Following testimony by building trades' President C. J. Haggerty backing the legislation, IUD's Mr. Carey took the witness chair to oppose the Taft-Hartley changes. Introducing a new bill for the industrial unions, Mr. Carey proposed that any legislation permitting craft unions to picket construction projects affecting all contractors at the site should also cover industrial unions.

Mr. Carey's argument was based on a case, now in the U. S. Court of Appeals, involving a test of the law that the craft unions are seeking to change. The Supreme Court had ruled, in the Denver case, that a craft union commits a secondary boycott when it pickets an entire construction site, halting operations of subcontractors, when it has a dispute with the prime contractor.

In the Appeals Court case, involving the Tennessee Coal and Iron Division of U. S. Steel, the United Steelworkers prevented craft union employees of a contractor from performing construction work at the plant. The AFL-CIO Building Trades Department, in a legal protest, claimed that the rules under the Denver case made this an illegal secondary boycott.

Mr. Carey told the House subcommittee that the IUD still favored relief for the building trades from the Denver ruling. However, he said, "These unions (the crafts) have sought to use the rule of the Denver case against industrial unions." Therefore, he added, "We are not prepared to give such support" to the building trades bill.

The IUD's secretary-treasurer also discussed the broad campaign of the

craft unions to handle factory maintenance work. ". . . They have mounted a nation-wide campaign in cooperation with the teamsters union to induce all industrial employers to subcontract their maintenance work. Through this program," Mr. Carey said, "they are seeking not only to steal jobs from industrial workers but also to undermine the benefits and protections which these workers have been able to obtain through their unions.

"We cannot sit idly by and support the legislation . . . while at the same time the leaders of the unions which would be benefited by narrower legislation are attempting to place a legal prohibition upon the actions of industrial unions based on the very rule from which they seek relief," Mr. Carey added.

Machinists' President Hayes also opposed the building trades' situs picketing bill, asking that it be "clarified" to make certain that craft union picketing could not be directed against other unions. Mr. Hayes noted that IAM members, particularly on missile sites, run into jurisdictional conflicts with building trades crews. Relief from the Denver rule, Mr. Hayes said, would give the crafts the right to picket against other unions when it should be used solely to "organize the unorganized."

Mr. Hayes asked the committee to make clear in the proposed legislation that "the picketing rights conferred in the bill cannot be used against the skilled union crews sent by missile manufacturers to install missile-launching and other equipment at construction sites."

Cement Industry Signs First 1961 Labor Pact

The Dundee Cement Co. of Dundee, Mich., and members of the United Cement, Lime and Gypsum Workers International Union have negotiated a two-year labor contract that will cost the company 18.5 cents an hour the first year, 14 cents an hour the second.

It is the first contract to be negotiated in the cement industry this year.

Wage increases under the contract will range from five to 15 cents an hour this year, hitting an average of 9.5 cents. The wage increase scheduled for next year is eight cents.

The balance of the contract's cost is largely in the fringe benefit area—one additional holiday, improved insurance and vacation benefits, increased contributions to a "security benefit plan," and various changes in premium pay.

Employers Fight Picketing Bill

They contend the union-sponsored bill is unfair to others, bad for the industry and the nation

Leading employer associations in and out of the construction industry have urged defeat of the controversial situs picketing bill now before Congress.

In testimony before the House General Subcommittee on Labor, they argued that the bill is unnecessary because the building trades unions already have the right to picket at construction sites where more than one employer is working. The bill is dangerous, they said, because its broad scope would encourage labor strife on many fronts, injure a host of innocent people, hurt the economy and hamper the national defense effort.

The principal bill, H.R. 2955, is known as the Thompson bill. It would preclude the National Labor Relations Board and the courts from branding as an illegal secondary boycott a strike against one of several contractors working at the same construction site if the strike involves a lawful dispute over "wages, hours and working conditions." A 10-day notice of intent to strike would be required at missile and other defense sites.

Among the employer groups that appeared in opposition to the bill were the Chamber of Commerce, Associated General Contractors of America, National Association of Home Builders, Building Contractors Association of New Jersey, and Federated Employers of Nevada, Inc.

Charles Keller, Jr., speaking for the AGC, said, "What this country needs is stricter enforcement of existing laws, or the establishment of voluntary procedures to either settle disputes or prevent them from ever happening."

He called the language of the bill "ambiguous." He said the measure violates the principles of law on "independent contractors" and could legalize product boycotts, extend labor disputes to off-site operations, encourage work stoppages on missile projects.

"The problems we have with the building trades unions," Mr. Keller observed, "must be worked out within the industry through the orderly processes of collective bargaining and not through additional legislation."

NAHB President E. J. Burke, Jr. raised similar objections to the measure. He emphasized the bill's ability to restore the now-illegal closed shop to the construction industry. Conceding the right of unions to engage in lawful primary strikes and picketing, he said those rights are protected by present law as long as the picketing conforms to Labor Board rules that apply equally to all unions.

The "broad language" of the bill, Mr. Burke also noted, "would grant an unlimited area in which the building trades unions could conduct strikes against use of products, materials or improved construction techniques" that are aimed at "more efficient construction and lower building costs."

The Chamber of Commerce, in more exhaustive testimony, reinforced all these fears and objections.

One of the points more fully developed by Charles B. Mahin, the Chamber's spokesman, is that the bill would allow the building trades to "exile not only nonunion employees but also members of other unions" from the construction sites. And it would give the building trades control "over all work that can be performed on the job site." Examples mentioned as possibilities included intensified warfare against the United Construction Workers and extension of the Burt Manufacturing Co. situation in which the sheet metal workers boycotted Burt products because Burt employees were organized by the steelworkers and not the sheet metal workers.

Several of the employer groups stressed the fact that the construction industry already has more than its share of secondary boycotts. They cited NLRB figures that show a total of 707 secondary boycotts in all industries last year—52% of which involved the AFL-CIO building trades and 16% the teamsters.

The National Society of Professional Engineers, which also opposed the bill, said it would put nonunion engineering and surveying employees in the position of having to join a union or pay the price of forcing their employees off construction jobs.

Paul H. Robbins, NSPE executive director, argued that the bill would allow the building trades to force replacement of such employees by union members or force contractors to stop dealing with nonunion engineering and surveying firms.

Missile Probe Hits Labor Practices

Witnesses before McClellan committee report heavy incidence of strikes and excessive overtime costs

The missile base construction program came under congressional scrutiny again last week as the Senate investigations subcommittee, headed by Sen. John L. McClellan (D., Ark.), began looking into labor disputes at ICBM sites.

An earlier probe by a House appropriations subcommittee, which centered on the program's management and on military-construction contractor relations, led to the Pentagon's recent organizational overhaul of the program.

Senator McClellan's investigation is concentrating so far on alleged featherbedding and inflated overtime pay for building trades workers, particularly at the Missile Test Center at Cape Canaveral, Fla. Senator McClellan criticized the workers for "gouging the government," and said new congressional measures may be needed to halt such practice and to curb work stoppages at missile sites.

Maj. Gen. William T. Thurman, an Air Force production programming official, reported that there have been 327 major work stoppages in the construction of 19 operational ICBM bases and three test sites since 1956, resulting in 162,872 man-days lost.

In 1960 alone, he said, 84,000 man-days were lost, amounting to 1.4% of the total man-days worked on the construction projects. Half of these were at Air Force missile test installations at Cape Canaveral and at Edwards and Vandenberg Air Force bases in California.

The general said that "site activation" work will account for nearly $3 billion of the approximate $12 billion earmarked for the ICBM program as now scheduled. He said about 55 prime contractors—including manufacturers—are working for the Air Force and Corps of Engineers, and that about 30 different industrial and construction unions represent the more than 100,000 workers employed.

General Thurman said that even though jurisdictional labor disputes involving the Davis-Bacon Act have been an important factor in the work stoppages, the Pentagon is no longer pressing the Labor Department to issue criteria for determining the act's coverage.

Instead, the military services have worked out the issue locally on a case-by-case basis "without encountering serious difficulties." Construction workers' rates, covered by Davis-Bacon, normally exceed wages of industrial workers who also work on the missile sites.

General Thurman said that "keeping the lid on overtime costs" is a difficult problem, and "is a subject of almost daily consultation with our contractors at the sites."

He explained that the key feature of the recent organizational changes in ICBM base construction management is to "center responsibility in one man at each level of management." He also said a "labor advisor" has been appointed to the staff of each "site activation task force commander," to prevent work stoppages and to "encourage orderly settlement of disputes."

The committee's investigators and contractor officials disclosed numerous instances of exorbitant overtime wages and featherbedding. Some of the more glaring examples: A $3.50-an-hour Cape Canaveral electrician earned $647 in one week; plumbers and pipefitters at Vandenberg AFB received over $365 in weekly wages; common laborers at Vandenberg earned as much as $287 in one week.

For the most part, however, the cases involved employees of mechanical specialty subcontractors at the missile sites and workers for contractors readying missiles for test launchings.

Cleveland Gets Three-Year Pact

Master agreement, which calls for a 45-cent wage increase, is hailed as a stabilizing element

Construction labor and management in Cleveland paved the way for three more years of labor peace and wage stability last week when they agreed to a pattern wage settlement of 45 cents over the next three years.

The agreement calls for a 15-cent increase, effective last Monday and 15-cent increases each of the following two years. Individual unions bound by the agreement will negotiate with their respective contractor associations on the form the increases will take and on working conditions.

The master agreement was concluded by the Building Trades Employers' Association, the Associated General Contractors and the wage policy committee of the Building and Construction Trades Council, AFL-CIO.

It carries a price tag of eight cents more than the one negotiated in 1958, but the latter occurred after a costly seven-week work stoppage.

Those who negotiated the agreement called it fair and equitable in view of its duration, strike-free nature and the size of increases being granted in other metropolitan areas. They said it will bring stability to employment conditions, and expressed confidence that increases in productivity over the contract's term will absorb the costs of the agreement.

In Philadelphia, laborers doing institutional, commercial and industrial construction work have received a 20-cent wage increase under a two-year contract. The increase, negotiated under a wage reopener, is payable in two 10-cent installments. The union has the option of putting part of the second hike into the welfare fund, which now receives 10 cents an hour. Pre-settlement scale was $2.60.

In Jacksonville, Fla., Local 401 of the plasterers union has notified the Associated General Contractors that it will extend its present contract, which expires in February 1962 to February 1963 without requesting a wage increase. The plasterers now get $3.50 an hour. The AGC is negotiating with other unions and has informed them that no pay increases will be considered even if it means a strike.

Meanwhile, contractor efforts to hold the line on wages appear to have increased the changes of construction strikes in Toronto, this summer. The operating engineers have broken off negotiations with the Toronto Builders' Exchange and the plasterers have indicated they will follow suit.

The exchange, which is still negotiating with three other unions, not only wants to hold the line on wages, but is is also seeking to strengthen management rights, to exclude foremen from bargaining units, to eliminate travel time and to gain recognition of the Ontario Jurisdictional Disputes Commission as the sole arbiter of work assignment disputes.

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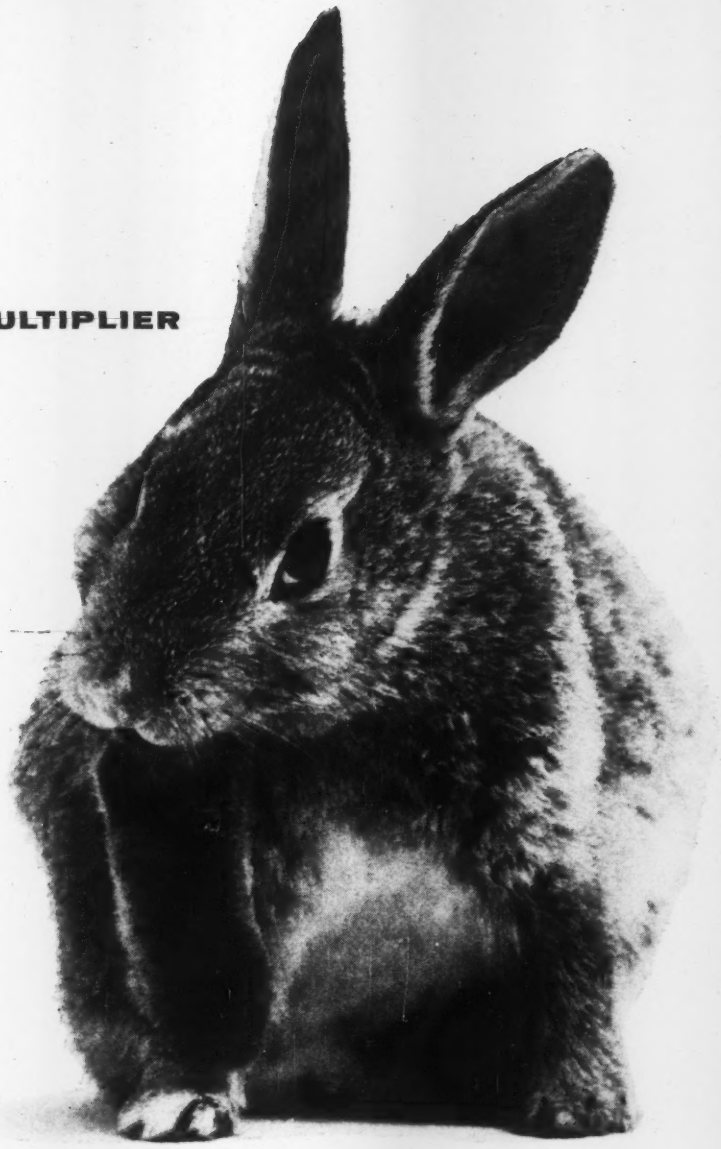

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Wanapum Dam, now being built, is a Public Utility District of Grant County project on the Columbia River in Washington. Grant County Constructors, a 5-firm combine headed by Morrison-Knudsen, is prime contractor. Designed by Harza Engineering Co.

A SINGLE RESPONSIBILITY FROM FOREBAY TO TAILRACE

For Wanapum Dam, Yuba is furnishing bridge and gantry cranes, spillway gates, gate hoists, bulkheads, intake gates, draft tube gates, frames and guides, trash racks, other necessary gates and guides . . . some 350 carloads of material under Yuba's single responsibility!

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Contracts Score Seasonal Gain

Heavy construction contracts awarded last month rose seasonally as private industry and state and local agencies moved major jobs into contractors' hands.

Volume averaging $454 million a week in April was 19% above the March rate, and the best rate for any month since last August.

But a lag in private mass housing and pipeline work dropped total volume to $1.8 billion, 9% below one year ago. The four-month total of $6.7 billion narrows the gain over a year ago to 1% compared to 6% at the end of the first quarter.

Most active construction market in April was public works—30% ahead of the March pace. Highways sparked the rate. Awards rose to $969, well ahead of private volume and 13% ahead of one year ago.

The $3.4 billion awarded through April edges out total private volume in the same period and tops a year ago by 11%.

State and municipal agencies awarded $775 million worth of contracts, a weekly rate outpacing March by 47% and a year ago by 11%. For the four months, the $2.6 billion worth of state and local contracts tops last year by 11%.

Federal construction alone failed to rise seasonally in April, slipping 11% below the March rate, but climbing 22% ahead of a year ago. The April total of $787 million is 10% above the year-ago total.

Private construction contracts in April hit $848 million, 8% above March, but 26% below April of last year. Awards totaled $3.4 billion in the first four months.

Private work, however, is progressing toward a brisker pace, particularly the commercial and industrial building.

Contractors' Costs Climb Again

ENR's 20-Cities Cost indexes stand at a record peak this month, pushed there by wage increases and higher lumber prices.

The Construction Cost Index, which measures cost trends of basic construction materials and common labor, reads 847.32, a rise of 1.2% since April. The Building Cost Index, a measurement of materials and skilled labor costs trends, is up 0.7% to 568.99. Both indexes are based on 1913 as 100.

Compared with a year ago, the Construction Cost Index and the Building Cost Index are up 3.0% and 2.0% respectively.

Since last month, the U.S. average rate for common labor rose 1.4% to $2.815 an hour, reflecting deferred wage boosts for laborers on both heavy construction and building projects. These increases totaled 10 cents an hour in Detroit and St. Louis, and 18 cents in Los Angeles and San Francisco. Laborers on building projects in Minneapolis obtained deferred boosts of 15 cents an hour.

Deferred increases for skilled building tradesmen effective May 1 include 15 cents for bricklayers in Boston, Los Angeles, Minneapolis and Philadelphia, and five cents for bricklayers in New Orleans. Carpenters got deferred boosts of 13 cents (including fringes) in Detroit, 18 cents in Minneapolis, five cents in New Orleans and 10 cents in St. Louis. Deferred hikes for structural ironworkers tally 10 cents an hour in Atlanta, 15 cents in Minneapolis and Detroit, 5 cents in New Orleans and 10 cents in St. Louis.

Higher prices for lumber added fuel to the cost-fire. ENR's U.S. average of prices for Douglas fir 2x4s rose 1.6% since April and the average for southern pine and West Coast hemlock rose 1.0%. Douglas fir prices at the mills, however, show signs of softening and the next few weeks may bring some easing in lumber-cost pressures.

Engineering Construction Contracts for April

Four Weeks—Thousands of Dollars (000 Omitted)

	April, 1961								Four Months			
	New England	Middle Atlantic	South	Mid-West	Mississippi to Rockies	Far West	Total U. S.	% Change '60 to '61	U. S. Cumulative 1961	1960	% Change '60 to '61	Canada April 1961
Public Works, Total	**44,155**	**167,902**	**164,679**	**156,168**	**236,776**	**198,871**	**968,551**	**+13**	**3,385,642**	**3,048,187**	**+11**	**58,859**
Waterworks	2,370	8,406	3,184	6,927	8,015	14,605	43,507	−42	130,971	150,723	−13	1,170
Sewerage	1,564	10,744	9,890	10,358	8,241	24,983	65,780	+60	229,372	177,861	+29	12,072
Bridges	939	15,969	9,095	5,925	8,877	23,926	64,731	−38	190,663	314,588	−39	3,173
Earthwork, waterways	928	8,755	11,747	3,463	61,924	15,922	102,739	+117	264,449	215,490	+23	15,324
Streets and roads	16,186	55,407	65,134	75,108	86,502	58,142	356,479	+35	1,174,507	906,812	+30	8,874
Buildings: Residential	4,924	25,230	22,142	2,014	13,911	5,038	73,259	+57	233,886	162,798	+44	966
Other	10,159	37,003	26,533	32,118	26,385	34,093	166,291	− 8	767,861	691,979	+11	4,776
Unclassified	7,085	6,388	16,954	20,255	22,921	22,162	95,765	− 1	393,933	427,936	− 8	12,504
State & Municipal	39,691	154,106	120,022	142,873	151,846	166,826	775,364	+11	2,598,540	2,333,048	+11	35,182
Federal	4,464	13,796	44,657	13,295	84,930	32,045	193,187	+22	787,102	715,139	+10	23,677
Private, Total	**49,016**	**287,931**	**115,061**	**133,073**	**157,192**	**105,755**	**848,028**	**−26**	**3,363,402**	**3,625,841**	**− 7**	**33,529**
Bridges				90			90	−64	90	1,399	−94	280
Buildings: Industrial	2,512	96,663	20,952	51,024	41,395	13,848	226,394	+ 7	1,021,399	771,388	+32	4,535
Mass housing	24,314	130,241	65,458	38,930	57,867	60,211	377,021	−46	1,473,480	1,826,220	−19	15,214
Commercial	22,135	60,092	24,925	38,945	37,096	28,101	211,294	+ 7	725,433	700,018	+ 4	12,100
Unclassified	55	935	3,726	4,084	20,834	3,595	33,229	−21	143,000	326,816	−56	1,400
Total, Apr. 1961—4 wks.	**93,171**	**455,833**	**279,740**	**289,241**	**393,968**	**304,626**	**1,816,579**	**− 9**	.....	.....	....	**92,388**
Total, Mar. 1961—5 wks.	85,821	454,586	353,898	223,372	486,601	307,997	1,912,275	....	.....	.....	....	101,563
Total, Apr. 1960—4 wks.	86,727	393,472	267,692	379,932	374,105	503,410	2,005,338	....	.....	.....	....	75,478
Four Mos. 1961 (17 wks)	**331,138**	**1,598,789**	**1,161,922**	**979,697**	**1,595,764**	**1,081,734**	.....	....	**6,749,044**	.....	**+ 1**	**449,213**
Four Mos. 1960 (17 wks)	399,706	1,593,284	906,472	1,113,494	1,390,814	1,270,258	.....	....	.....	6,674,028	....	610,601
% Change '60 to '61	−17	+0.3	+28	−12	+15	−15	.....	....	.....	.....	....	−26

ENGINEERING NEWS-RECORD reports U. S. (50 states) construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

About Time

Delaware legislature passes highway bond measure

Delaware's lawmakers last week buried the political hatchet long enough to authorize sale of $26.6 million worth of bonds to finance highway construction.

The bill, sure to be signed this week by Gov. Elbert N. Carvel, will return to life the state's Interstate program which was dead all last year. Other road programs were nearly completely paralyzed. Last year no Interstate contracts were awarded, and only $4.4 million worth of highway construction work went to contract (ENR Apr. 27, p. 81), because political skirmishes blocked passage of financing measures.

The state funds plus federal-aid will bring construction outlays in the next two years to nearly $70 million. Of this, $20 million worth of work will be advertised for bids May 10. Moreover, the state's economy will get a boost through the addition of 6,000 workers to employment rolls.

The measure establishes a new 11-man highway commission—five members from each political party and one member named by the governor.

Other provisions create an office of the administrator to oversee all functions except those of policing, motor vehicle regulation and financing. A controller will handle the agency's financial affairs.

Los Angeles Abandons Plans For $12-Million Garage

Los Angeles County's plans for a $12.2-million parking garage evaporated last week leaving contractors only a drop in their business-bucket—a parking lot three blocks square. The immediate need for parking areas dictated the County Board of Supervisors' decision to abandon construction of the multi-level garage.

The open parking lot also fits into the country's recent decision that several scattered parking facilities will be more effective now than a few major garages sometime in the future.

Razing of structures in the area will start soon. The county also hopes to sell the land to the Community Redevelopment Agency if laws permit. The agency is handling the Bunker Hill renewal project.

The board's decision ends all hope for the controversial garage project that came off the design boards of Victor Gruen Associates four years ago at a cost to the county of $567,000.

OFFICIAL PROPOSALS

RATE: The rate for official Proposal advertising is $2.70 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.
SEND COPY TO: Official Proposal Division, Engineering News-Record
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: May 11, 1961

Power Authority of the State of New York

NIAGARA POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR THE REHABILITATION OF HYDE PARK GOLF COURSE NORTH OF PORTER ROAD AND RESTORATION OF WATERWAYS FROM STATION 113+78 to STATION 141+23 IN NIAGARA FALLS, NIAGARA COUNTY, NEW YORK
SPECIFICATION NO. PA-N-23049
NIAGARA CONTRACT NO. N 40

NOTICE TO CONTRACTORS: The Power Authority of the State of New York will receive sealed proposals for rehabilitation of Hyde Park Golf Course north of Porter Road and restoration of waterways from Station 113+78 to Station 141+23, in Niagara Falls, Niagara County, New York, until 2:30 P.M. Eastern Daylight Saving Time on the 11th day of May, 1961, at the Authority's office, 18th Floor, the Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The principal items of work are grading, topsoiling and seeding of the golf course (excluding greens, tees and bunkers), construction of roads and bridges and lawn sprinkling system.

Estimated quantities of work are:

98 acres	Grading
3,400 cu. yds.	Excavation, unclassified
2,700 cu. yds.	Foundation course, crushed rock
98 acres	Topsoiling, 6 inches thick
98 acres	Preparing seed beds, placing limestone, fertilizer, seeding, mulching and maintenance
6,460 lin. ft.	Galvanized steel pipe, 1" to 3"
6,210 lin. ft.	Cast iron pipe, 4" to 6"

The golf course shall be ready for play on or before July 1, 1962. All work shall be completed on or before September 15, 1962.

Plans, specifications and proposal forms for the work may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, specifications and proposal forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the total of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: May 16, 1961

Commonwealth of Puerto Rico Department of Public Works

DE DIEGO STORM WATER PUMPING STATION
MUNICIPALITY OF SAN JUAN, P. R.
ADVERTISEMENT
April 21, 1961

The Board of Awards of the Department of Public Works of Puerto Rico will receive sealed proposals for the construction of the De Diego Storm Water Pumping Station, Municipality of San Juan, Puerto Rico.

Bidders shall submit their proposals at the office of the Board of Awards in the Department of Public Works until 2:00 P.M. (Puerto Rico time) on the Sixteenth day of May, 1961 at which time and place said proposals will be publicly opened and read aloud.

The work to be done comprises furnishing all materials and labor, tools, plant and equipment necessary for constructing, installing and completing ready for operation the De Diego Storm Water Pumping Station.

Copies of the plans, specifications and instructions to bidders may be examined without charge at the office of the Procurement and Contracts Division of the Department of Public Works or at the offices of Buck, Seifert & Jost S.A., Consulting Engineers, 223 Manuel V. Domenech Street, Hato Rey, Puerto Rico and 112 East 19th Street, New York 3, New York. Copies thereof may be obtained at the office of the Procurement and Contracts Division of the Department of Public Works until 96 hours prior to the opening of bids or at the office of Buck, Seifert & Jost S.A., Consulting Engineers, 112 East 19th Street, New York 3, New York until one (1) week prior to the opening of bids, upon a deposit of TWENTY ($20.00) DOLLARS in cash, money order or certified check payable to the Secretary of the Treasury. The full amount of the deposit will be refunded to each depositor upon the return of the plans and specifications in good condition within twenty (20) days after the opening of bids.

Each proposal must be accompanied by a provisional bond in the amount of TWENTY-FIVE THOUSAND ($25,000.00) DOLLARS in any of the forms indicated in the instructions to bidders.

The Board of Awards reserves the right to accept any bid or to reject any or all bids and to award any contract under the conditions found most favorable to the Commonwealth of Puerto Rico.

FRANCISCO LIZARDI
Secretary of Public Works

BUCK, SEIFERT & JOST S.A.
Consulting Engineers

District of Columbia—Highway Construction—Dept. of Highways & Traffic, D. C., April 18, 1961. ANACOSTIA FREEWAY PENNSYLVANIA AVENUE INTERCHANGE PAVING, GRADING, DRAINAGE AND STRUCTURES, FEDERAL-AID PROJECT NO. U-45(22). Invitation No. C-6182-H, consisting of approx. 14,000 sq. yds. Reinf. Portland Cement Concrete Pavement 9" depth; 7,303 Tons hot asphaltic concrete base, Class B; 1,984 Cu. Yds. Class BB concrete for footings; 2,882 Cu. Yds. Class BB concrete for walls and piers; and 1,017,800 lbs. structural steel. (Wage rates have been predetermined by Labor Dept.) Bid forms, plans and specifications are now available from Supervisor, Bid & Contract Division, Procurement Office, D. C., Room 404, 499 Pennsylvania Ave., N.W., upon deposit of a certified check for $30.00 per set, payable to D. C. Treasurer (Phone NA 8-6000, Ext. 481). SEALED BIDS to be opened 2:00 PM, EDT, May 23, 1961, in Room 424, 499 Penn. Ave., N.W.

U. S. Government

Sealed bids from Small Business Concerns for modernization at the U.S. P.O. & Cthse. (Washington & Johnson Streets), Brooklyn, N. Y., project No. 00868, will be received until 2:00 P.M., E.D.S.T., May 26, 1961; and then publicly opened. Bidding material may be obtained after April 28, 1961, from the Business Service Center, General Services Administration, 250 Hudson Street, New York 13, N. Y.

OFFICIAL PROPOSALS

Bids: May 25, 1961

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y., Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 25th day of May 1961, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, F. J. Fuller, District Engineer, 353 Broadway, Albany 1, New York						
Essex Rtes. 22 & 73	FARC 61-57	Ticonderoga-Montcalm Landing, S.H. 8073; Ticonderoga Vill. Pt. 2, FASH 50-7; Ticonderoga-Crown Point Pt. 1, S.H. 891 Schroon Lake-Ticonderoga, Pt. 2, S.H. 8230 Proj. F-371(5)	3.44	Asphalt Concrete 2 Span Comp. Plate Girder Bridge 214.3' Tot.	$80,000 Plans $5	$1,430,000
Essex Rtes. 9 & 22	DA 61-2	Defense Access Improvements on Rte. 9, S.H. 8314, 8238, 232, 859; Rte. 22, S.H. 8128, 1641, 1687, 8238 Proj. RAD 13(5)	25.5	Tree Trimming	$1,000 Plans $5	19,000
Greene Rte. 23	R.C. 61-74	Ashland-Windham, S.H. 8051	4.15	Asphalt Concrete	$8,000 Plans $5	148,000
Essex	DA 61-4	Reber Road—Defense Access Proj. RAD 13(3)	0.46	Asphalt Concrete=0.44 Mi. Misc. Work=0.02 Mi.	$3,500 Plans $5	63,000
DISTRICT No. 2, L. Ketchum, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Oneida Rte 13, 49 & 69	FARC 61-36	Cleveland-Vienna, Pt. 4, S.H. 8103; South Bay-Vienna, Pt. 1 & 2, S.H. 8219; Vienna-Camden, Pt. 1 & 2, S.H. 8186; Camden-Taberg, Pt. 1, S.H. 5461 Proj. F-384(6); F-635(7)	9.32	Asphalt Concrete, Type 2A	$87,000 Plans $5	1,580,000
DISTRICT No. 3, E. E. Towlson, District Engineer, 333 E. Washington Street, Syracuse, New York						
Oswego	M.A. 61-1	Maintenance Area for Interstate Route (505) at Maple View	....	Grading, Drainage & Paving	$9,000 Plans $5	155,000
Seneca te. 96A	FARC 61-54	Reservation Rd.-Ovid, Sh 323 Ovid-Romulus, S.H. 5282 Proj. F-626(6)	4.59	Asphalt Concrete Type 1A	$50,000 Plans $5	912,000
DISTRICT No. 4, B. F. Perry, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Monroe (Rte. 47 & Int. Tr. Rte. 490)	FITS 61-12 FATS 61-13	Interstate Rte. Conn. 580 (Fish 56-9 & FISH 58-16) Rochester-Bushnell Basin, Pts. 2 & 3;Rochester Outer Loop (FASH 58-17, FAC 59-8, FASH 59-14 East Ave. to Winton Road) Winton Road-Sea Breeze Pt. 2, (FASH 56-7). Proj. I-490-2(24); U-1097(7)	4.75	Traffic Signs and Delineators	$6,000 Plans $5	109,000
Monroe	FATC 61-2	Rochester City: Inner Loop (FAC 60-7) (Front Street to North Street) Proj. U-1089(14)	0.28	Traffic Signals	$2,800 Plans $5	50,000
Monroe	LOSPTS 61-2 FATS 61-15	Lake Ontario State Parkway (Dewey Ave.-Rochester City Line);Rochester City: Lake Ontario State Parkway Art. Hwy. (Rochester City Line-Lake Ave.) Proj. U-1141(4)	1.68 (0.93 Acc.)	Traffic Signs & Delineators	$2,100 Plans $5	39,000
Monroe Rte. 104	FARC 61-79	Rochester-Webster, Pt. 1, S.H. 98 Rochester-Webster, Pt. 2, S.H. 99 Proj. U-362(13)	1.15	Asphalt Conc=1.04 Mi.; Misc. Work=0.11 Mi. Incl. Bridge Comp. WF Beam 1 Span--74.5' Total	$35,000 Plans $5	633,000
Monroe (Int. Trg. Rte. 490) MDC	FISH 61-14	Interstate Rte. Conn. 580 Rochester Western Expressway (Union St. to West Side Drive) Proj. I-IG 490-2(23)	3.70 (1.26 Acc.)	9" Cem. Conc. Pavt., 2 @ 24' Var.=3.61 Mi., Access=0.76 Mi. Cem. Conc. Pavt. & 0.50 Mi. Asph. Conc. Type 1A. Misc. Work=0.09 Mi.; 2 RRGS Comp. I-Beam, Ea. 3 Sp., 192' Tot. 4 H.C.S. Comp. I-Beam 2-Ea. 3 Sp., 188' Tot.; 2-Ea. 3 Sp., 128' Tot.	$185,000 Plans $5	3,388,000
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Chautauqua (Rte. 39)	R.C. 61-75	Sheridan-Forestville, Pt. 1, S.H. 8358	4.84	Asphalt Concrete	$20,000 Plans $5	365,000
Erie Niagara (Rte. 78)	FARC 61-64	Transit, Pt. 2, S.H. 89; Transit Rd. Pt. 3, S.H. 507; Transit Pt. 3, S.H. 507 Proj. F-651(10)	0.65 (0.16 Acc.)	Asph. Conc.=0.50 Mi.; Misc. Work=0.31 Mi. Comp. I-Beam Br. 2 Spa., 157' Tot.	$36,000 Plans $5	663,000
DISTRICT No. 6, Wm. J. Dennis, District Engineer, State Office Bldg., 30 West Main Street, Hornell, New York						
Chemung (Rte. 427)	FARC 61-70	Penn State Line-Wellsburg, S.H. 1710; Wellsburg-Waverly, Pt. 1, S.H. 1764 Proj. S-697(4)	1.31	Asphalt Concrete	$50,000 Plans $5	884,000
Steuben (Rte. 17)	FARC 61-80	Jasper-Addison, S.H. 5253 Proj. F-442(8)	3.97	Asphalt Concrete	$17,000 Plans $5	300,000
DISTRICT No. 7, R. W. Sweet, District Engineer, 444 Van Duzee Street, Watertown, New York						
Clinton (Rte. 22B)	FARC 61-71	Plattsburg-Cadyville, Pt. 1, S.H. 777; Morrisonville-Schuyler Falls, S.H. 1567; Peru-Schuyler Falls, S.H. 1705. Proj. S-548(2)	6.30	Asphalt Conc. Type 1A=6.26 Mi., Misc. Work=0.04 Mi., Comp. I-Beam Br., 3 Sps. 199.38' Tot.	$62,000 Plans $5	1,132,000
Clinton (Rte. 22)	R.C. 61-78	Mooers-Hemmingford, S.H. 8174	3.42	Asphalt Conc. Type 1A	$12,000 Plans $5	206,000
Franklin (Rte. 3)	R.C. 61-77	Piercefield-Tupper Lake, Pt. 2, S.H. 8109	2.13	Asphalt Conc. Type 1A	$5,500 Plans $5	98,000
St. Lawrence, Franklin (Rte. 37) MDC	T.S. 61-14	Massena-Helena, Pt. 1, S.H. 1261; Raquette River-Hogansburg, Pt. 1, S.H. 1861; Raquette River-Hogansburg Pt. 2; St. Regis Indian Reservation-Fort Covington, Pt. 1, S.H. 8396	5.40	Traffic Signs and Delineators	$2,500 Plans $5	47,000
DISTRICT No. 9, J. C. Federick, District Engineer, 71 Frederick Street, Binghamton, New York						
Broome (Int Trg. Rte. 81)	FISH 61-11 FIC 61-9	Interstate Rte. 505 Five Mile Point to Broad Ave. (Five Mile Point-Binghamton State Hospital) Proj. EI-81-1(12)	3.01 (5.08 Acc.)	9" Cem. Conc. Pavt. 2 @ 24' Var.=2.51 Mi; Asph Conc. Ty. 2A=0.14 Mi.; Misc. Work=0.36 Mi.; Access=3.67 Mi. Cem. Conc. Pavt; 0.05 Mi. Cem. Conc. Pavt with Carb. Black; 1.21 Mi. Asph Conc; 0.15 Mi. Asph. Conc. Type 2A; 7 Hgs Comp. I-Beam, 6 Sps. 310.75' Tot., 4 Sps. 240.2' Tot., 4 Sps. 225.2' Tot., 3 Sps. 158.25' Tot., 3 Sps. 152.5' Tot., 4 Sps. 335' Tot., 4 Sps. 344' Tot.; 1 Br. Comp. I-Beam, 1 Sp @ 42.6'; 2 Hgs Welded Plate Girder; 1 Sp @ 136.4'; 3 Sps 309' Tot.; 5 Brs. Reinf. Conc. Twin Closed Box 41.33' Tot; 41.33' Tot; 41.33' Tot.; 25.5' Tot; 25' Tot.	$400,000 Plans $10	7,414,000

(Continued on the following page)

OFFICIAL PROPOSALS

(Continued from preceding page)

OFFICIAL PROPOSALS

DISTRICT No. 10, A. M. SARR, District Engineer, 325 W. Main Street, Babylon, L. I., New York

Kings (Int. Trg. Rte. 278)	FIGE 61-1	Interstate Rte. Conn. 512 Gowanus Expressway-Cont. 3 (2nd Ave. to 20th St. Incl. Prospect Expressway Interchange) Proj. EI-278-1(60)	0.66 (0.31 Acc.)	Main Line: Reinf. Conc. Slab. Roadway (Struct)=0.30 Mi. Grade, Drain. & Misc. Work=0.36 Mi., Surf Sts. Grade. Drain. Misc. Work=0.31 Mi. Incl. Elev. Structure & Prospect Exp. Inter.	$375,000 Plans $10	6,819,000
Kings	FAPE 61-2	Prospect Expressway (Fifth Avenue to Greenwood Ave.). Proj. U-1081(5)	1.20	Roadside Development	$6,000 Plans $5	115,000
Kings	FAPETS 61-1	Prospect Expressway: Fort Hamilton Parkway Interchange (Greenwood Ave. to Beverly Rd.-FAPE 59-1) Proj. U-1081(6)	0.54	Traffic Signs	$2,500 Plans $5	42,000
Nassau	FAWOBETS 61-2	Wantagh-Oyster Bay Expressway (Contract 1A) (Old Country Road, C.R. 4 to Jericho Turnpike-Plainview Rd. S.H. 436). Proj. U-1110(4)	3.34	Traffic Signs	$9,000 Plans $5	160,000
Nassau (Rtes. 25, 106, 107)	FATS 61-11	Massapequa-Glen Cove, S.H. 9017; Jericho-Oyster Bay, S.H. 9021; Jericho Turnpike, S.H. 9020; Jericho Turnpike-Plainview Rd. S.H. 436 Proj. US-377(7), US-500(5), U-1000(11)	3.08	Traffic Signs and Delineators	$7,000 Plans $5	130,000
Queens	FAGCP 61-1	Grand Central Parkway: Section 3 (150th St. to 166th Street). Proj. U-629(19)	0.53	Relocation of Utilities (Municipal)	$21,000 Plans $5	398,000
Suffolk	SSP 61-2	Southern State Parkway (New Highway to Captree State Parkway)	6.30	Landscaping	$25,000 Plans $5	452,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Department of Public Works" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids: May 16, 1961

Port of Oswego Authority
East Side Terminal Facilities,
Contract 1
Reconstruction of Existing Wharf

ADVERTISEMENT FOR BIDS

Sealed proposals will be received by the Port of Oswego Authority in the Common Council Chambers, City Hall, Oswego, New York, until 2:00 p.m., Eastern Daylight Time, on the 16th day of May, 1961, and immediately thereafter will be opened publicly and read aloud.

The work to be done under this contract shall be completed in 90 calendar days after the date specified in the Notice to Proceed, and consists of:

Concrete pile cap, grading and paving, removal of existing railroad track, new railroad track, bollards and anchorages, rubber fender system, steel ladders, pipe conduits and manholes, concrete drainage pipe, drop inlets, and the repair of existing stone-filled timber cribs.

Bid guaranty in the amount of $5,000 and a performance bond in the sum of 100 per cent of the contract price will be required.

Contract Plans, Specifications and Proposal Forms may be obtained from the Port of Oswego Authority, West First Street, Oswego, New York, and from the Engineer, Fay, Spofford & Thorndike, 11 Beacon Street, Boston 8, Massachusetts, on or after the 20th day of April, 1961.

A deposit of $20.00 is required for a complete set of Contract Documents and Plans, which will be refunded upon return of the Plans and Specifications in good condition within 10 days after the opening of bids.

PORT OF OSWEGO AUTHORITY
By Clark Morrison III, Chairman

Bids: June 1961

Kingdom of Thailand
Royal Irrigation Department
Bangkok, Thailand

INVITATION FOR BIDS—NO. YS-2-24
MACHINE SHOP BUILDING

The Royal Irrigation Department of the Kingdom of Thailand hereby invites sealed, written bids for furnishing and delivering the following equipment either fob Contractor's shipping point or cif Bangkok Wharf, Thailand, for the Bhumiphol Dam and Power Plant, Yanhee Multipurpose Project, Kingdom of Thailand in accordance with the Contract Documents:

A Machine Shop Building

The machine shop building shall be of the prefabricated steel construction, with galvanized steel siding and roof. It shall be approximately 49 by 30 meters with a ridge height of approximately 10 meters. The building shall consist of two sections, with the main strength section being 49 by 22 meters and a lean-to type section of 49 by 8 meters. The building shall be furnished complete with a five-ton traveling crane with a 22 meter span, lighting fixtures and partitions for an office and tool room.

Invitations for Bids will be issued in May, 1961, and will be opened in June, 1961. Copies of Contract Documents, Invitation for Bids—No. YS-2-24, Machine Shop Building, may be obtained by qualified Bidders on written request to:

Royal Irrigation Department
Attention: Thai Liaison Engineer
c/o Engineering Consultants, Inc.
1901 South Navajo Street
Denver 23, Colorado, U. S. A.

Each request must be accompanied by a check or money order, payable to the Royal Irrigation Department, in the amount of U. S. $5.00 for each copy of the Contract Documents requested. The remittance is nonreturnable.

M. L. Xujati Kambhu
Director General
Royal Irrigation Department
Kingdom of Thailand
Bangkok, Thailand
April 20, 1961

Bids: June 1, 1961

The Port of New York Authority

GEORGE WASHINGTON BRIDGE
LOWER LEVEL EXPANSION
NEW YORK APPROACH
SECTION NO. 10
NORTHBOUND CONNECTION FROM
HENRY HUDSON PARKWAY
CONTRACT GWB-190.119

Pursuant to the provisions of the Highway Law and special provisions for projects financed with Federal Aid Funds, sealed proposals for the sale of materials and performance of work for the construction of the northbound connection from the Henry Hudson Parkway to the New York approach to the George Washington Bridge will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Thursday, June 1, 1961, at which time said proposals will be opened and read in Room No. 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $50.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $50.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the Contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK
AUTHORITY
S. Sloan Colt, Chairman
New York, May 4, 1961

Contractors Watch This Section—

for new projects. Publish your announcements through the proposal sections of *Engineering News-Record* and get their bids.

OFFICIAL PROPOSALS

Bids: May 25, 1961

The Port of New York Authority

Sealed proposals for the following work will be received at the Office of the Chief Engineer, Room 1100, 111 Eighth Avenue, New York 11, New York, until 2:30 P.M. on date indicated, at which time said proposals will be opened and read in Room 1108.

Contract EP-110.014 — Elizabeth-Port Authority Piers—Buildings Nos. 121, 122, 125 & 126—Paving and Utilities—Deposit $30.00 per set of documents—Bids will be received until 2:30 P.M. on Thursday, May 25, 1961.

Contract EP-110.018 — Elizabeth-Port Authority Piers—Buildings Nos. 121, 122, 125 and 126 and Berth 52 Upland Area—Removal of Surcharge—Deposit $30.00 per set of documents—Bids will be received until 2:30 P.M. on Thursday, May 25, 1961.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design, Room 1115, 111 Eighth Avenue, New York 11, N. Y. Documents will be furnished upon receipt of the above deposit (each set including one copy of the Contract Drawings) for not more than three sets to any one company. Additional sets will be furnished upon payment of an amount for each set equal to the deposit indicated above, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman
New York, May 4, 1961

Bids: May 19, 1961

West Virginia Turnpike Commission

ADVERTISEMENT FOR PROPOSALS

Sealed proposals will be received by the West Virginia Turnpike Commission for:

CONTRACT NO. M-14

The work to be done under Contract No. M-14 consists of furnishing all labor, materials and equipment for cleaning and repainting all exposed surfaces of steelwork on the Yeager Bridge over the Kanawha River near Mile 86 in Kanawha County, West Virginia, which bridge forms a part of the West Virginia Turnpike.

The approximate tonnage of steelwork to be repainted is 3,360 tons.

Proposals will be received at the office of the West Virginia Turnpike Commission, Administration Building, Port Amherst, West Virginia, until 2:00 P.M., Eastern Standard Time, on May 19, 1961, at which time and place said proposals will be publicly opened and read.

Contract documents may be inspected by prospective bidders during office hours at the office of the Commission, and will be furnished for Five Dollars ($5.00) per set, not refundable, upon application to the Commission at the above address. Checks shall be made payable to the West Virginia Turnpike Commission.

Inspection of the steelwork on and above the surface of the bridge roadway will be permitted only on May 11 and 12, 1961, and then only after prior arrangements have been made with the General Manager of the Turnpike.

Proposals must be made upon the proposal forms furnished by the Commission in the manner designated in the specifications, and must be enclosed in sealed special address envelopes bearing the name and address of the bidder and the number of the contract on the outside, and must be accompanied by a CASHIER'S or CERTIFIED CHECK or PROPOSAL BOND in favor of the West Virginia Turnpike Commission FOR AN AMOUNT EQUAL TO FIVE (5) PER CENT OF THE AMOUNT OF THE PROPOSAL, but not less than $500.00 nor more than $200,000.00 and must be delivered at the place designated above on or before the day and hour named. Copies of the proposal form and proposal bond form to be used for submitting proposals, and of the special addressed envelope are furnished in detached form with the contract documents.

The Contract will be awarded or proposals rejected within thirty (30) days from the date of opening proposals. The right is reserved to reject any or all proposals, and to waive any or all formalities.

WEST VIRGINIA
TURNPIKE COMMISSION
W. C. Stathers
Chairman

Bids: May 19, 1961

Delaware Interstate Highway Division

CONTRACT NO. 45
DELAWARE MEMORIAL BRIDGE
ACCESS ROAD TO MEMORIAL PLAZA
NOTICE TO BIDDERS

Sealed proposals for the construction of an access road to the existing memorial plaza just south of the Delaware Memorial Bridge Toll Plaza near Wilmington, Delaware, will be received by the Delaware Interstate Highway Division at the Administration Building, Delaware Memorial Bridge, until 11:00 A.M., Eastern Daylight Saving Time, on May 19, 1961, at which time and place said proposals will be opened and read.

The work to be performed under this Contract includes, but is not necessarily limited to: excavation; embankment construction; pavement, sidewalk, curb and gutter construction; new drainage facilities; topsoiling and seeding; and other incidental work.

Work on this project shall begin within ten (10) days after the execution of the Contract and shall be completed on or before October 20, 1961.

Monthly payments will be made for ninety (90) per cent of the work completed each month.

Bidders must submit proposals upon forms provided by the Division.

Each proposal must be accompanied by an acceptable surety bond, certified check or cash in the amount of at least ten (10) per cent of the total amount of the proposal.

The Contract will be awarded or proposals rejected within thirty (30) days from the date of opening proposals. The right is reserved to reject any or all bids.

One set of the contract documents may be obtained from the Delaware Interstate Highway Division at the Administration Building, Delaware Memorial Bridge near Wilmington, Delaware, after May 8, 1961, upon payment of $10.00. Contract documents need not be returned and the above payment will not be refunded. Checks shall be made payable to Howard, Needles, Tammen & Bergendoff.

Delaware Interstate Highway Division
By: J. H. Tyler McConnell, Director
William J. Miller, Jr., Acting Chief Engineer
Delaware Interstate Highway Division
May 4, 1961

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5576) will be received at Ogden, Utah until 10 a.m., Mountain Standard Time, June 6, 1961, for furnishing labor and materials for Willard Canal, Pumping Plants, and Intake Channel, Weber Basin Project, Utah. Location Box Elder and Weber Counties, Utah. Principal items are 922,500 cu. yds. excavation; 56,200 lin. ft. furnishing treated timber piles; 8,535 cu. yds. concrete; and other work. Completion time 690 days. For particulars, address Bureau of Reclamation, P. O. Box 360, Salt Lake City 10, Utah; P. O. Box 387, Ogden, Utah; or Building 53, Denver Federal Center, Denver, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-5582) will be received at Denver, Colorado, until 2 p.m., Mountain Standard Time, June 1, 1961, for furnishing stub angles, tower bodies, leg extensions and special parts for single and double circuit transmission line steel towers. Estimated weight 4,070,000 pounds for Central Valley Project, California. Delivery is desired within 250 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

Read the Official Proposal Column of
ENGINEERING NEWS-RECORD
This Week and Every Week

EMPLOYMENT OPPORTUNITIES

Send NEW Ads and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. Box 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 11: 255 California St.

• POSITIONS VACANT

Soils Engineer. Graduate Civil Engineer with field experience in foundation investigation, testing, and laboratory management. Will supervise field exploration and soils laboratory testing for highway construction. Required to analyze field information and test data to develop design criteria and recommend construction technique. Salary, to be negotiated depending on experience. Location, Intermountain West. P-6187, Engineering News-Record.

Structural Engineer-Midwest consulting firm seeks Ph.D. to design complex steel structures, reinforced and prestressed concrete. Preference will be given to applicants with practical experience. **Permanent position with** established firm in business since 1929. Moving expenses paid. Send resume, including education, experience, and personal qualifications to P-6245. Engineering News-Record.

Estimator—Quantity takeoff, some pricing. Work under chief estimator. Some travel. Young engineer preferred. Nationwide contractor, home office Northern Ohio. P-6552, Engineering News-Record.

Soils Stabilization Engineer, college graduate with experience in highway soils or soil stabilization. Both field and laboratory experience desirable. Technical service position involving combination of staff and field work on highway chemicals for soil stabilization, dust control and ice control supporting national sales organization. Send resume to P-6549, Engineering News-Record.

Mechanical Engineer-Experienced in design and maintenance of industrial heating, air conditioning and steam distribution systems for a large medical research center. Excellent opportunity to grow with organization. Beginning salary $8,955. Federal Civil Service Merit System position with all retirement, leave and insurance benefits. Relocation expenses reimbursed. Write Mr. Ross Holliday, Plant Engineering Branch, National Institutes of Health, Bethesda 14, Maryland.

Graduate civil engineer or geologist with at least 2 years experience in caisson construction or foundation test drilling capable of project supervision. Contact American Foundation Corporation, 5204 East 25th Street, Indianapolis, Indiana.

Executive Officer for Colorado River Basin Regional Water Pollution Control Board, State of California. Preferred qualifications: Registered civil engineer, college graduate (or equivalent) in sanitary engineering or related fields, 5 years increasingly responsible professional experience in water pollution control or closely related field (at least 2 years of which have been in supervisory or administrative capacity). Salary $10,860 to $13,200. Final selection will be made on basis of interview. Applications must be filed by June 1, 1961. Apply P. O. Box 277, Indio, California.

Estimator-Engineer. Permanent position for man with experience in slip-form construction, both in the field and in cost estimating. Capable of take-off and pricing from preliminary and working drawings. Salary in line with background and experience. Engineering degree or registration is not a requisite. P-6637, Engineering News-Record.

(Continued on the following page)

DON'T FORGET

the box number when answering advertisements. It is the only way we can identify the advertiser to whom you are writing.

STRUCTURAL DESIGN ENGINEER

Applicants should have a civil engineering degree with 8 to 10 years of experience in structural design of plants in chemical or related industry. Specific experience should include design of foundations, structures, supports and buildings. Also capable of making own drawings and estimates on complete installations.

INSTRUMENTATION ENGINEER

Should possess electrical engineering degree as well as minimum of 5 years experience in specifying all types pneumatic and electronic process instrumentation in chemical or related plants—prefer experience in engineering firm.

Send detailed resume outlining experience and salary requirements, in confidence, to Personnel Director,

VULCAN-Cincinnati, Inc.
120 Sycamore Street, Cincinnati 2, Ohio

PROJECT ENGINEER EXPERIENCED IN HEAVY CONSTRUCTION ENGINEERING

FOR

POSITION IN N. Y. ENGINEERING DEPARTMENT OF LARGE FIRM OF CONTRACTING ENGINEERS

Reply giving complete experience record, availability and salary desired

P-6578, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

• POSITIONS VACANT
(Continued from preceding page)

Civil Engineer—Young, energetic, to work on construction jobs. Previous experience not necessary. P-6557, Engineering News-Record.

Architectural or Civil Engineer for development of engineering standards and data applicable to structural building material. Interesting opportunity Washington, D. C. area. Age 26-35. Degree required and registration desirable. Send photo and resume to P-6654, Engineering News-Record.

Graduate Civil Engineer with two to five years' experience in traffic engineering and/or computer programming wanted for Washington, D. C. office of large firm. Position will involve computer applications to various C.E. problems. Salary dependent on experience. P-6652, Engineering News-Record.

Capable C.E. graduate of well recognized engineering school with desire to settle down and experienced in road and bridge design required by small Springfield, Illinois, consulting firm. Submit resume, references, and salary requirements to P-6644, Engineering News-Record.

Civil Engineer for Director of Public Works for City of Ashland, Wisconsin. Send resume of experience, availability and starting salary. P-6631, Engineering News-Record.

Jr. Engineer—young Civil Eng. all phases of Municipal Eng. for city of 32,000. Experience not required. Salary open. Submit resume and salary requirements to City Engineer, Newburgh, N. Y.

Detailers—Structural steel detailers top notch. Large N. J. fabrication and erection organization has openings for experienced men. Permanent positions. All benefits. Write in confidence. P-6632, Engineering News-Record.

• EMPLOYMENT SERVICE

Want higher salary? 200-1,000 new positions reported monthly. Get free copy. National Employment Reports, 20 E. Jackson, 902-B, Chicago 4, Ill.

• POSITIONS WANTED

Chief Estimator—Civil Engineer, age 37. Field experience from layout engineer to superintendent. PW-6495, Engineering News-Record.

Chief Estimator, Building Construction. Extensive competitive experience on all types, can take full charge of bid, take-off to completion. Successful record. Resume and highest references upon request. PW-6494, Engineering News-Record.

Construction Supt.—31 years experience all phases Bldg. Construction. Will relocate, Midwest preferred. PW-6618, Engineering News-Record.

• POSITIONS WANTED

Construction Co. Executive, BSCE, MBA, PE, 13 years experience as Field Engineer, Superintendent, Estimator-Project Manager, Gen'l Superintendent, Partner and Vice President. Age 38. Present salary $18,000. Capable of complete firm management. PW-6486, Engineering News-Record.

Chief Estimator—25 years experience all phases Building and Heavy Construction—qualified to handle job from bidding to completion—available immediately—will relocate to suit. PW-6550, Engineering News-Record.

Civil—Structural, BCE, 38, Registered 8 states, 13 years industrial planning and design experience. Presently self employed. Desire permanent position with responsibility and future. Will invest. Will relocate. PW-6558, Engineering News-Record.

Construction Superintendent: highways, dams, heavy excavation, grading. Complete job responsibility. PW-6595, Engineering News-Record.

Supt. Heavy Construction, 30 years experience, large R.f. concrete structures, bridges, coffer-dams, earth, rock excavation, concrete pavement. Have know how, get results. C. Barth, 706 S. Calumet, Marion, Illinois. Phone WY 3-8327.

Equipment maintenance superintendent or equipment superintendent of heavy construction, capable of setting up repair, preventative maintenance, cost, etc. program, 16 yrs. exp. 35 yrs old, U.S. or foreign. Available in May. PW-6586, Engineering News-Record.

Construction Manager, BSCE, PE, seventeen years broad experience construction projects from bid to completion. Available on reasonable notice. PW-6600, Engineering News-Record.

BCE, age 29, 5 yrs experience. Desires position in contract handling or marketing. Available now. Will relocate. Resume on request. PW-6599, Engineering News-Record.

Senior Civil Structural Engineer, Regist. Broad experience in large bridges; indust., comm., instit. bldgs. etc. Handles multi-million dollar jobs from A to Z. Avail. for partnership or respon. position. PW-6591, Engineering News-Record.

Construction Supt. General Construction. PW-4182, Engineering News-Record.

B.S.C.E., P.E., 32, 6 years exp. inspection, storm sewers, highways. Desires position West, Southwest. PW-6299, Engineering News-Record.

Registered Str. Civil Engr. (2 states) wants to associate with established Consultant to form an alliance to design bridges, highways, buildings, etc. 30 years experience, 16 years in supervision. PW-6638, Engineering News-Record.

• POSITIONS WANTED

Registered Str. Engr. 31 years experience in bridge, buildings, highways and industrial plant layout design and supervision. 17 years in supervision, construction, estimating and specification writing included. Will relocate. Available in 2 weeks. PW-6642, Engineering News-Record.

Construction Manager—Good record as successful field manager. Twenty years experience building construction supt., project manager, general supt. with top grade contractors. Engineering background. Presently employed. Profit sharing connection desired. PW-6608, Engineering News-Record.

Project Manager, complete administration and supervision incl. negotiations & estimating, 24 yrs. hvy. constr. major projects U.S. & O.S. PW-6649, Engineering News-Record.

Construction Manager, General Superintendent, Chief Estimator—25 years experience—public & industrial building construction—from bidding thru completion—resume on request—salary $14,000. PW-6635, Engineering News-Record.

Water Supply—Engineering Geologist. Over 11 years administrative & field experience. Heavy emphasis all phases of ground water development, wells, pumps, subsurface exploration, hydrologic testing, evaluations, well design, project engineering, seismic and resistivity surveys. Experienced all types of drilling methods including mud rotary and reverse circulation. Desire responsible position with private, industrial or consulting organization. PW-6653, Engineering News-Record.

Electrical Project Engineer Superintendent with background of estimating, cost control, labor relations, design, engineering, on heavy construction, chemical refineries, industrial plants, tunnels, bridges, substations, O.H. and U.G. distribution systems, steel mills, with engineers and constructors. Details on request. PW-6619, Engineering News-Record.

Field Engineer—HVAC, Plbg., Piping. Construction repres., coordr., engr.-inspection. Engel-2A, 273 Lex. Ave., N.Y.C. 13.

Superintendent — Construction Manager — earthen dams, highway grading, bridges. Location immaterial. PW-6634, Engineering News-Record.

Supt.-estimator, 40, 10 yrs. responsible exp. multi-million dollar bldg. const., now college teacher, wants summer job. Strong background shopping centers, public buildings, cost systems, purchasing, owner-built work. Reg. C.E., surveyor. K. Royer, Bldg. Const. Dept., Univ. Fla., Gainesville, Fla.

Constr. Engineer.—Inspector, job advisor, long exper. in ind. plants and comm. bldgs. reinf. concrete, steel constr., excavation, dams, sewers, roads, piling & constr. work. Europ. background, 4 years U.S. and Canada, layout, detail, quantity survey, estimation, relocate or travel, position with future. PW-6643, Engineering News-Record.

Operational Traffic Engineer & Hwy Designer, 34, P.E., B.A., B.S.C.E., T.E. postgrad. 6 yrs. exp. major public authority. Desire position Europe. Fluent Italian, French, Spanish. PW-6647, Engineering News-Record.

Field Office Manager—Accountant, 39. Experienced in accounting, auditing, taxes, payroll, timekeeping, personnel, insurance, purchasing. Room 515, 150 W. 47 St. N. Y. 36, N. Y.

Civil Engineer, P.E., R.L.S. 22 yrs. exp. highway design, incl. interstate, toll road, and complex interchanges. All phases, complete design and supervision. Desire location Florida, S.E. or overseas. PW-6646, Engineering News-Record.

E.E.—1 yr. const. & 10 yrs. electrical field exp.—checking plans, specs., inspecting & supervision of electrical systems—on schools, industrial bldgs., & power house. Desires E.E. field or Ass't Supt. of Constr. PW-6645, Engineering News-Record.

Hydraulic Design Engineer. Professional Engineer, Colorado. Six years experience in design of canals, canal structures, municipal water supply systems, electronic computer programming, hydrologic studies. B.S. degree and graduate studies. Resume upon request. PW-6655, Engineering News-Record.

MECHANICAL ENGINEERS

Challenging overseas position, with an excellent opportunity for professional development, immediately available. Require the services of a graduate Mechanical Engineer on the supervision of construction of the Powerhouse on a hydro-electric project in Thailand. Prefer engineer with five or more years of experience on hydro-electric dams and powerhouses.

Position duties will include the installation of the penstocks, radial gates, fixed wheel gates, hydraulic turbines, governors and the mechanical features of the switchgear. 24 Month Contract, living quarters furnished, excellent salaries, opportunity to visit foreign countries.

Write fully include salary data

to

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ME's, CHEM E's, EE's, plus CIVILS

When you think of INTEREST
think of your job

When you think of GROWTH
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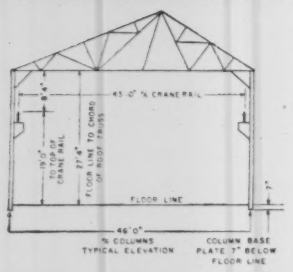
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ENR—T1/3

Revise or Reject

CURRENT HEARINGS on the controversial situs picketing bill have revealed once again a wide disagreement on what the bill is all about (ENR Apr. 13, p. 185). Under the circumstances it would seem a disservice to the construction industry and to the public at large for Congress to approve the bill in its present form. The object of legislation should be the solution of specific problems, not the creation of new and unpredictable ones.

It can be conceded, as the AFL-CIO building trades unions contend, that the bill is designed to restore to them the right to strike more effectively to protect their wages and working conditions. It can also be conceded that the bill is thereby designed to make it easier for the unions to organize new members.

But Congress must judge the merits of such arguments in the light of the unions' present strike rights, and in the light of the bill's possible impact on others in the construction industry and elsewhere. So far, the building trades have failed to explain with any clarity why the present right to strike under the restrictions contained in the Moore Drydock decision of the National Labor Relations Board is inadequate, and why the organization rights granted by the pre-hire and hot-cargo provisions of the Landrum-Griffin law are not enough. If there is valid justification for more extensive rights along these lines—and if that is what the bill is all about—then it would seem a simple matter to rewrite the bill in clearer and more explicit language and have it judged on that footing.

In the meantime, the bill's broad language not only continues to obscure its purpose, but it makes the scope of the bill anyone's guess. Some AFL-CIO unions outside the building trades have now joined employer groups in efforts to kill the bill on this ground. They see a real possibility that the bill would allow secondary boycotts by construction unions to prevent the installation of materials made in shops not organized by the building trades, and to prevent technicians organized by other unions from working at construction sites. In balder terms, the critics mean the bill may license labor warfare over conflicting jurisdictional claims at missile sites, and over prefabrication and other hot-cargo disputes at all construction sites.

In view of the nation's compelling need to attain a strong defense posture and its need to break the current recession through fuller production and fuller employment, this does not seem to be the time for Congress to experiment with loose legislative language that many feel could hamper both efforts.

In addition to all of these problems, the present bill contains few, if any, safeguards against closed shop practices that can force workers unwillingly into unions, and it fails to afford even those neutral contractors working under the separate contract method any protection against the labor disputes of others.

Under the circumstances it would seem that the time has come for the building trades to reassess their objectives and to start all over again. And rather than going to Congress for aid, why not make a serious effort to use the labor and labor-management forums that are now available to settle voluntarily—or perhaps just reach agreement on—the grievances the bill is apparently designed to cure? Also, experiments in bargaining and longer experience with the Landrum-Griffin law may minimize the grievances. Out of such efforts might still come a legislative petition—but chances are that it would be less provocative and less complicated than the present bill.

Federal Aid for Road Upkeep?

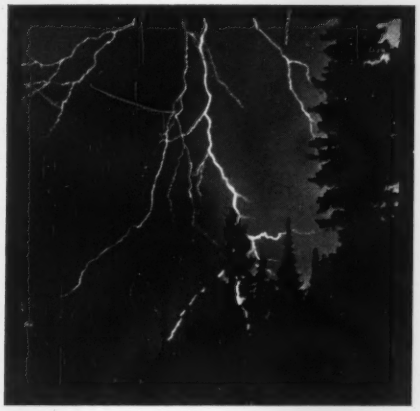
UP TO NOW federal aid for roads has been available only for construction, with maintenance costs carried by the states. If this was acceptable on roads for which the federal government put up 50%, it would seem to be acceptable when federal aid is at the 90% level, as on the Interstate system. Yet the practice is beginning to be questioned—and not without logic.

The logic arises from the fact that maintenance costs on these high-density routes are much higher than the $1,500 per mile national average for other highways maintained by the states. Typical costs on tollways, for example, including those already incorporated in the Interstate system, are 10 times as much. It is pertinent to note that the expense of maintaining a greater mileage of limited-access freeways is one reason why maintenance costs are expected to rise to an all-time high of about $900 million this year (ENR Apr. 27, p. 81).

Application of tollway experience to the roughly 30,000 miles of Interstate highways not yet open to traffic means an additional annual tab of some $450 million. Under existing legislation, the states must pick up the check. The net effect may be to reduce matching funds available for construction or to curtail state-financed construction projects. The latter may already be happening, since the state highway departments plan to spend 17% less on state-financed projects this year than last.

In some states, of course, income may grow with demand so that a problem does not develop. In others, new sources of revenue may be found to keep the highway program in balance. If neither solution is possible, however, the over-all concept of orderly development of all elements of the nation's highway system may become impossible.

It is not too early to begin a re-evaluation of the responsibility of the federal government in meeting the increasing costs of highway maintenance, particularly as they relate to the Interstate system.



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